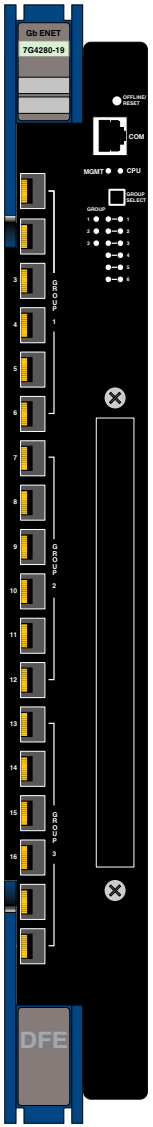
Matrix DFE-Platinum Series Module 7G4280-19 Installation Guide



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50 Minuteman Road
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Part Number: 9034081-01 September 2005

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Class 1 Laser Transceivers

The single mode interface modules use Class 1 laser transceivers.
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The Class 1 laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 Laser transceivers comply with the following safety standards:

- 21 CFR 1040.10 and 1040.11 U.S. Department of Health and Human Services (FDA).
- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6 dBm or 55 x 10^{-6} watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is 0.8 W cm^{-2} or 8 x 10^{3} W m^{2} sr-1.

Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

Declaration of Conformity

Application of Council Directive(s):	**89/336/EEC** **73/23/EEC**
Manufacturer's Name:	**Enterasys Networks, Inc.**
Manufacturer's Address:	**50 Minuteman Road** **Andover, MA 01810** **USA**
European Representative Address:	**Enterasys Networks, Ltd.** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG14 2PZ, England**
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Equipment Type/Environment:	**Networking Equipment, for use in a Commercial or Light Industrial Environment.**

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About This Guide

This guide provides an overview of installation and troubleshooting instructions, and specifications for the Enterasys Matrix™ 7G4280-19 DFE (Distributed Forwarding Engine)-Platinum Series module, the 7G-6MGBIC or 7G-6MGBIC-A (optional Ethernet interface module), and the Mini-GBIC modules.

For information about the CLI (Command Line Interface) set of commands used to configure and manage the DFE modules, refer to the Enterasys Networks™ *Matrix DFE-Platinum Series Configuration Guide*.

Note: In this guide, the following terms are used:

- *DFE module* refers to the 7G4280-19.
- *Ethernet interface module* (or simply *interface module*) refers to an optional uplink card installed on the main logic board and accessible through the option slot of the 7G4280-19.
- *Mini-GBIC* (Mini-Gigabit Interface Card) refers to a smaller optional interface card that plugs into an optional 7G-6MGBIC or 7G-6MGBIC-A interface module.
- *7G-6MGBIC-A* refers to 7G-6MGBIC and 7G-6MGBIC-A interface modules unless otherwise noted.

Important Notice

Depending on the firmware version used in the DFE module, some features described in this document may not be supported. Refer to the Release Notes shipped with the DFE module to determine which features are supported.

Who Should Use This Guide

Electrical Hazard: Only qualified personnel should perform installation procedures.

Riesgo Electrico: Solamente personal calificado debe realizar procedimientos de instalacion.

Elektrischer Gefahrenhinweis: Installationen sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

This guide is intended for a network administrator responsible for installing and setting up the DFE module.

How to Use This Guide

This preface provides an overview of this guide and the DFE-Platinum Series manual set, a brief summary of each chapter, and defines the conventions used in this document. To locate information about various subjects in this guide, refer to the following table:

For...	Refer to...
An overview of the DFE module and instructions to obtain technical support from Enterasys Networks	Chapter 1, **Introduction**
Network requirements that must be met before installing the DFE module	Chapter 2, **Network Requirements**
Instructions to install the DFE module hardware and optional interface card	Chapter 3, **Installation**
Troubleshooting installation problems and diagnosing network/operational problems using the LANVIEW LEDs	Chapter 4, **Troubleshooting**
Specifications, environmental requirements, and physical properties of the DFE module and optional Ethernet interface modules, and Mini-GBIC interface cards	Appendix A, **Specifications**
Instructions to set the mode switches when necessary and remove and replace the DRAM SIMM or DIMM memory	Appendix B, **Mode Switch Settings and Installing Options**

Related Documents

The manuals listed below can be obtained from the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

http://www.enterasys.com/support/manuals

- *Matrix DFE-Platinum Series Configuration Guide* describes how to use the Command Line Interface to set up and manage the DFE modules.
- *Cabling Guide* provides information on dB loss and cable specifications.

Unlike the *Matrix DFE-Platinum Series Configuration Guide,* the *Cabling Guide* is not listed alphabetically on the web site. Instead, it is listed under the *Overview Guides* link.

Conventions Used in This Guide

The following conventions are used in this guide.

Note: Calls the reader's attention to any item of information that may be of special importance.

Caution: Contains information essential to avoid damage to the equipment.

Precaución: Contiene información esencial para prevenir dañar el equipo.

Achtung: Verweißt auf wichtige Informationen zum Schutz gegen Beschädigungen.

Electrical Hazard: Warns against an action that could result in personal injury or death due to an electrical hazard.

Riesgo Electrico: Advierte contra una acción que pudiera resultar en lesión corporal o la muerte debido a un riesgo eléctrico.

Elektrischer Gefahrenhinweis: Warnung vor sämtlichen Handlungen, die zu Verletzung von Personen oder Todesfällen – hervorgerufen durch elektrische Spannung – führen können!

Warning: Warns against an action that could result in personal injury or death.

Advertencia: Advierte contra una acción que pudiera resultar en lesión corporal o la muerte.

Warnhinweis: Warnung vor Handlungen, die zu Verletzung von Personen oder gar Todesfällen führen können!

1

Introduction

This chapter provides an overview of the DFE-Platinum Series module capabilities, introduces the 7G4280-19, optional Ethernet interface modules, and supported Mini-GBICs.

Important Notice

Depending on the firmware version used in the DFE module, some features described in this document may not be supported. Refer to the Release Notes shipped with the DFE module to determine which features are supported.

For information about...	Refer to page...
Overview of DFE-Platinum Series Module Capabilities	1-2
DFE Module and Interface Options	1-3
Connectivity	1-6
Management	1-7
Secure Networks Policy Support	1-7
Standards Compatibility	1-8
LANVIEW Diagnostic LEDs	1-8
Getting Help	1-8

Overview of DFE-Platinum Series Module Capabilities

The Platinum Distributed Forwarding Engine (DFE) is Enterasys' next generation of enterprise modules for the Matrix N-Series and Matrix E7 switches. These DFEs deliver high performance and flexibility to ensure comprehensive switching, routing, Quality of Service, security, and traffic containment. Key features include:

- Superior performance and capacity to support more high-bandwidth and latency sensitive applications
- 10/100/1000 Base-TX, 1000 Base-FX, and 10 Gigabit Ethernet connectivity
- Integrated Services Design that reduces the number/ type of modules required, simplifies network design, and lowers entry cost
- Port- and User-Based Policy and Multilayer Packet Classification that provides granular control and security for business-critical applications
- High-availability services with stateful failover for services and management
- Self-learning configuration modules with increased reliability and fault tolerance that reduces configuration time and maximizes uptime
- Network-wide configuration, change, and inventory management that is easier to install, troubleshoot, and maintain
- Reduced support and maintenance costs; decreases configuration time
- Support for a variety of converged applications including VoIP with Power-over-Ethernet

DFE Module and Interface Options

This section provides an overview of the 7G4280-19 (Figure 1-1) and the Ethernet interface modules 7G-6MGBIC and 7G-6MGBIC-A (shown in Figure 1-2). For information about features of the DFE modules and how to configure them, refer to the *Matrix DFE-Platinum Series Configuration Guide*.

7G4280-19

The 7G4280-19 has 18, 1000BASE-X compliant front-panel ports that support a variety of optional Small Form Factor Pluggable (SFP) Gigabit connections using optional Mini-Gigabit Interface Cards (MGBICs). There is also a slot for an optional Ethernet interface module 7G-6MGBIC or 7G-6MGBIC-A.

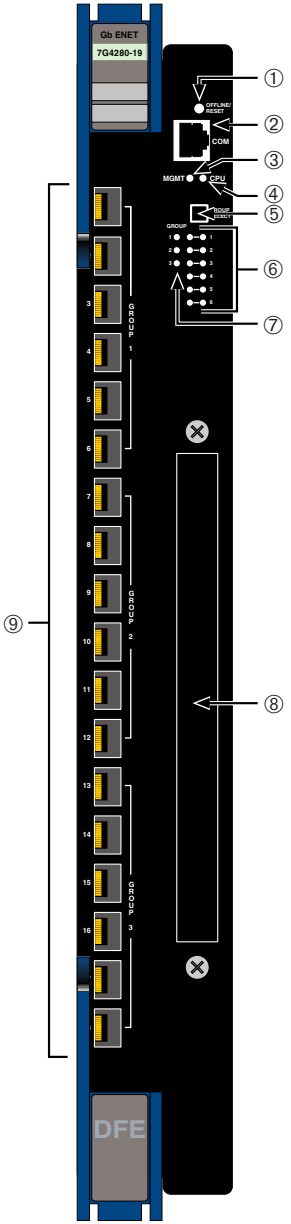
The 7G4280-19 can be installed in a Matrix E7, N7, N5, N3 or N1 chassis, but only supports FTM2 data backplane interconnections in the Matrix E7 chassis. Traffic flow from FTM2 to FTM1 can only be accomplished with a 7H4382-25, 7H4382-49, 7H4383-49, or 7H4385-49 DFE module.

Each of the front panel ports can operate in either half-duplex or full-duplex mode of operation. The duplex mode can be determined by either auto-negotiation or manual configuration.

The DFE module ports can be configured to provide a high level of security, control traffic by limiting the rate of traffic accepted into the module and prioritizing traffic to expedite the flow of higher priority traffic through the module. For a complete list of capabilities refer to the *Matrix DFE-Platinum Series Configuration Guide*.

The DFE module receives power and backplane connectivity when it is inserted into a Matrix E7, N7, N5, N3 or N1 chassis.

Figure 1-1 7G4280-19 DFE-Platinum Module

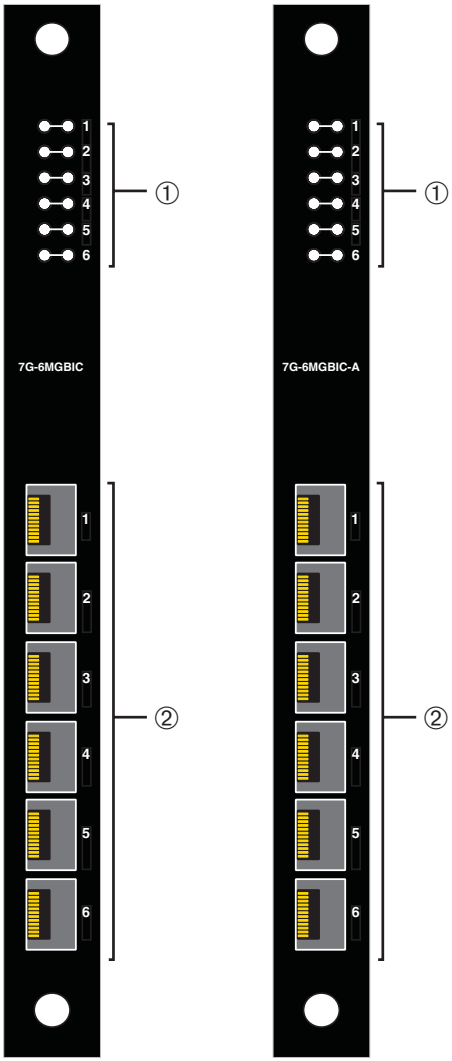


1 OFFLINE/RESET switch
2 RJ45 COM port
3 MGMT LED
4 CPU LED
5 GROUP SELECT switch
6 GROUP STATUS LEDs
7 GROUP SELECT LEDs
8 Ethernet Interface Module option slot
9 Ports (1-18), 1000 Mbps, through optional MGBICs

7G-6MGBIC/7G-6MGBIC-A Gigabit Ethernet Interface Options

The 7G4280-19 option slot provides access to an installed interface module such as the 7G-6MGBIC and 7G-6MGBIC-A shown in Figure 1-2. Table 1-1 indicates the standards the module complies with and the type of physical connections.

Figure 1-2 Optional 7G-6MGBIC and 7G-6MGBIC-A Ethernet Interface Modules



1 Port status LEDs

2 1-Gigabit port slots for Mini-GBIC uplinks

Table 1-1 Optional Ethernet Interface Module, Compliance, and Physical Connection

Ethernet Interface Module	Compliant to	Physical Connection
7G-6MGBIC (not supported on all DFE modules)	1-Gigabit Ethernet	Six port slots that support optional hot-swappable Mini-GBICs.
7G-6MGBIC-A	1-Gigabit Ethernet	Six port slots that support optional hot-swappable Mini-GBICs.

Connectivity

7G4280-19

The 7G4280-19 DFE module has 18, 1000BASE-X compliant, Small Form Factor Pluggable (SFP) fixed front-panel port slots for Gigabit Ethernet connections using optional Mini-Gigabit Interface Cards (Mini-GBICs). The port slots enable you to install a mix-and-match number of SFPs to meet a need for various Gigabit Ethernet connections. There is also a slot for an optional 7G-6MGBIC/7G-6MGBIC-A Ethernet interface module.

The 7G4280-19 DFE module can be installed in a Matrix E7, N7, N5, N3 or N1 chassis, but only supports FTM2 data backplane interconnections in the Matrix E7 chassis. Traffic flow from FTM2 to FTM1 can only be accomplished with a 7H4382-25, 7H4382-49, 7H4383-49, or 7H4385-49 DFE module.

7G-6MGBIC/7G-6MGBIC-A

The optional 7G-6MGBIC/7G-6MGBIC-A provides up to six additional 1-Gigabit port slots for a mix-and match number of optional Mini-GBICs.

Mini-GBICs

At the printing of this document the following six Mini-GBICs to support 1-Gbps fiber-optic or copper connections were available.

- MGBIC-LC01 for a 1000BASE-SX compliant LC fiber-optic multimode connection
- MGBIC-LC03 for a 1000BASE-SX compliant LC fiber-optic multimode connection
- MGBIC-LC09 for a 1000BASE-LX compliant LC fiber-optic single-mode connection
- MGBIC-MT01 for a 1000BASE-SX compliant MT-RJ fiber-optic single-mode connection
- MGBIC-08 for a 1000BASE-ELX compliant LC fiber-optic single-mode connection
- MGBIC-02 for a 1000BASE-T compliant RJ45 copper connection

Management

Management of the module or system can be done using either in-band or out-of-band type of access. In-band remote management is possible using Telnet, Enterasys Networks' NetSight® management application, or WebView™ application. Out-of-band local management is provided through the RJ45 COM (Communication) port on the front panel using a VT100 terminal or a VT100 terminal emulator.

Switch Configuration Using WebView

Enterasys Networks' HTTP-based Web management application (WebView) is an intuitive web tool for simple management tasks.

Switch Configuration Using CLI Commands

The CLI commands enable you to perform more complete switch configuration management tasks.

For CLI command set information and how to configure the module, refer to the *Matrix DFE-Platinum Series Configuration Guide*.

Secure Networks Policy Support

A fundamental concept that is key to the implementation of the Enterasys Secure Networks methodology is policy-enabled networking. This approach provides users of the network with the resources they need - in a secure fashion – while at the same time denying access to applications or protocols that are deemed inappropriate based on the user's function within the organization. By adopting such a "user-personalized" model, it is possible for business policies to be the guidelines in establishing the technology architecture of the enterprise. Two major objectives are achieved in this way: IT services are matched appropriately with individual users; and the network itself becomes an active participant in the organization's security strategy. The Secure Networks architecture consists of three tiers:

- Classification rules make up the first or bottom tier. The rules apply to devices in the Secure Networks environment, such as switches and routers. The rules are designed to be implemented at or near the user's point of entry to the network. Rules may be written based on criteria defined in the Layer 2, Layer 3 or Layer 4 information of the data frame.
- The middle tier is Services, which are collections of individual classification rules, grouped logically to either permit or deny access to protocols or applications based on the user's role within the organization. Priority and bandwidth rate limiting may also be defined in services.
- Roles, or behavioral profiles, make up the top tier. The roles assign services to various business functions or departments, such as executive, sales, and engineering.

To enhance security and deliver a true policy-based infrastructure, the Enterasys Secure Networks methodology can take advantage of authentication methods, such as 802.1X, using EAP-TLS, EAP-TTLS, or PEAP, as well as other types of authentication. Authorization information, attached to the authentication response, determines the application of policy. Authorization information is communicated via the policy name in a RADIUS Filter-ID attribute. An administrator can also define a role to be implemented in the absence of an authentication framework. Refer to the release notes shipped with the module for details.

Standards Compatibility

The DFE modules are fully compliant with the IEEE 802.3-2002, 802.3ae-2002, 802.1D-1998, and 802.1Q-1998 standards. The DFE module provides IEEE 802.1D-1998 Spanning Tree Algorithm (STA) support to enhance the overall reliability of the network and protect against “loop” conditions.

LANVIEW Diagnostic LEDs

LANVIEW diagnostic LEDs serve as an important troubleshooting aid by providing an easy way to observe the status of individual ports and overall network operations.

Getting Help

For additional support related to the module or this document, contact Enterasys Networks using one of the following methods:

World Wide Web	http://www.enterasys.com/support
Phone	1-800-872-8440 (toll-free in U.S. and Canada) For the Enterasys Networks Support toll-free number in your country: **http://www.enterasys.com/support/gtac-all.html**
Internet mail	**support@enterasys.com** To expedite your message, please type **[SWITCHING]** in the subject line.
To send comments or suggestions concerning this document to the Technical Writing Department: **techpubs@enterasys.com** To expedite your message, please include the document Part Number in the email message.	

Before contacting Enterasys Networks for technical support, have the following information ready:

- Your Enterasys Networks service contract number
- A description of the failure

- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

2

Network Requirements

Before installing the module, review the requirements in this chapter concerning the following:

For information about...	Refer to page...
Link Aggregation	2-1
Module Placement in a Matrix E7 Chassis	2-2
1000BASE-SX/LX/ELX Network	2-2
1000BASE-T Network	2-2

The network installation must meet the requirements to ensure satisfactory performance of this equipment. Failure to do so will produce poor network performance.

Note: The *Matrix DFE-Platinum Series Configuration Guide* and the *Cabling Guide* referred to in the following sections can be found on the Enterasys Networks World Wide Web site:

http://www.enterasys.com/

Refer to “Related Documents” on page xv.

Link Aggregation

Link Aggregation is a method of grouping multiple physical ports on a network device into one logical link according to the IEEE 802.3ad-2002 standard. Because Link Aggregation is standards based, it allows for automatic configuration with manual overrides (if applicable), and can operate on 10 Mbps, 100 Mbps, or 1000 Mbps Ethernet full duplex ports. Thus the network administrator can combine a group of five 100 Mbps ports into a logical link (trunk) that functions as a single 500 Mbps port. As long as the DFE modules agree on which ports are in the trunk, there are no problems with looping, and the Spanning Tree can treat this trunk as a single port.

In normal usage (and typical implementations) there is no need to enable/disable ports for Link Aggregation. The default values will result in the maximum number of aggregations possible. If the switch is placed in a configuration with its peers not running the protocol, no aggregations will be formed and the DFE modules will function normally (that is, Spanning Tree will block redundant paths).

For details about the commands involved with configuring the Link Aggregation function, refer to the *Matrix DFE-Platinum Series Configuration Guide*.

Module Placement in a Matrix E7 Chassis

If you want to mix 6x1xxx, 6x2xxx, 6x3xxx, and 7x4xxx series modules in the same Matrix E7 chassis, it is necessary to have a DFE bridging module installed and follow the instructions described in "Module Placement and Rules" on page 3-9 to successfully bridge data traffic to some or all modules in the Matrix E7 chassis. At the time of this printing, the FTM1-to-FTM2 bridging modules available are: 7H4382-25, 7H4382-49, 7H4383-49, and 7H4385-49.

1000BASE-SX/LX/ELX Network

Optional Mini-GBICs installed in the 7G4280-19 front-panel ports 1 through 18 or in a 7G-6MGBIC/7G-6MGBIC-A interface module provide Gigabit Ethernet connections operating at 1000 Mbps (1 Gbps). The device at the other end of the fiber-optic connection must meet IEEE 802.3-2002 Gigabit Ethernet requirements for the devices to operate at Gigabit speed. Refer to Appendix A for further details on Mini-GBIC specifications.

1000BASE-T Network

The 7G4280-19 and optional 7G-6MGBIC/7G-6MGBIC-A interface modules also support Mini-GBICs for copper wire connections through RJ45 connectors, which can operate up to 1000 Mbps. The device at the other end of the twisted pair segment must meet IEEE 802.3-2002 1000BASE-T network requirements for the devices to operate at Gigabit speed.

Note: The optional Mini-GBIC copper wire connection supports Category 5 UTP cabling with an impedance of between 85 and 111 ohms for 1000 Mbps operation.

3

Installation

This chapter provides the instructions to install the 7G4280-19 DFE module and an optional interface module 7G-6MGBIC or 7G-6MGBIC-A. Follow the order of the sections listed below to correctly install the DFE module.

For information about...	Refer to page...
Required Tools	3-1
Unpacking the DFE Module	3-2
Installing Optional Ethernet Interface Module	3-2
Installing Optional Mini-GBICs	3-5
Backplane Connections and Installation Rules	3-8
Installing 7G4280-19 in Matrix E7, N5, or N7 Chassis	3-12
Installing 7G4280-19 in Matrix N3 or N1 Chassis	3-15
Connecting to the Network	3-16
Connecting to COM Port for Local Management	3-26
Completing the Installation	3-32

Required Tools

Tools needed to install the 7G4280-19 and options include:

- Phillips screwdriver
- Flat blade screwdriver

Unpacking the DFE Module

Unpack the DFE module as follows:

1. Open the box and remove the packing material protecting the DFE module.
2. Verify the contents of the carton as listed in Table 3-1.

Table 3-1 Contents of 7G4280-19 Module Carton

Item	Quantity
7G4280-19	1
Installation Guide	1
Customer Release Notes	1

3. Remove the tape seal on the non-conductive bag to remove the DFE module.
4. Perform a visual inspection of the DFE module for any signs of physical damage. Contact Enterasys Networks if there are any signs of damage. Refer to "Getting Help" on page 1-8 for details.

Installing Optional Ethernet Interface Module

Note: Install any optional equipment before proceeding to "Backplane Connections and Installation Rules" on page 3-8 for an explanation of the rules to install different series modules in a Matrix E7 chassis.

At the time of this printing, the 7G-6MGBIC and 7G-6MGBIC-A are available for the 7G4280-19. Refer to your release notes for the latest available Ethernet interface modules. The 7G-6MGBIC and 7G-6MGBIC-A each provide six 1-Gigabit port slots for optional Mini-GBIC connections.

Installing a 7G-6MGBIC/7G-6MGBIC-A involves

- removing the coverplate from the DFE module (7G4280-19),
- installing the 7G-6MGBIC/7G-6MGBIC-A, and
- installing the Mini-GBICs.

Caution: An antistatic wrist strap is required to perform the following procedures to minimize ESD damage to the devices involved.

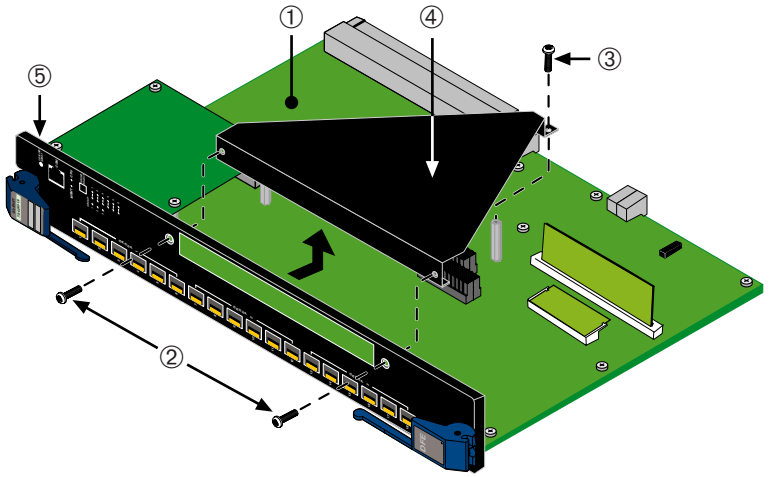
Precaución: Para minimizar los efectos de las descargas de electricidad estática, deberá utilizar una pulsera antiestática al realizar los siguiente procedimientos.

Removing the Coverplate

Refer to Figure 3-1 and proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions on the antistatic wrist strap package).

Figure 3-1 Removing the Coverplate



1 7G4280-19
2 Coverplate screws (2)
3 Screw
4 Coverplate
5 DFE Module front panel

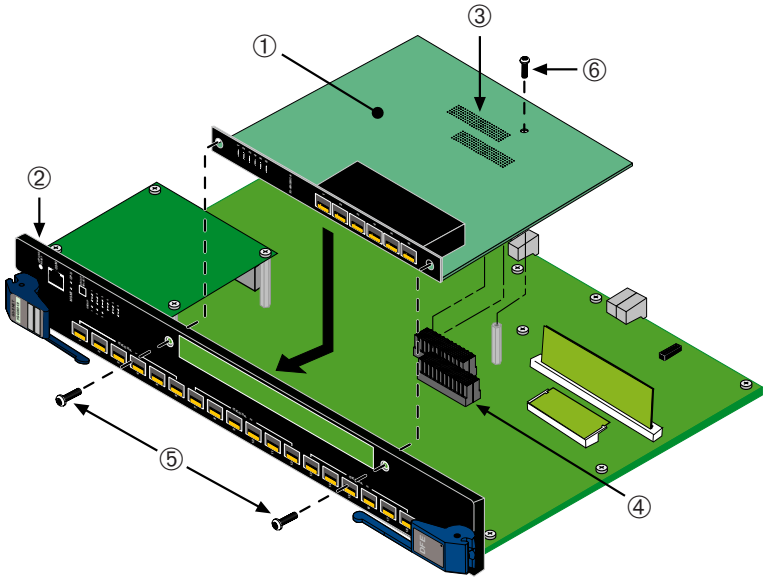
2. Remove and save the two coverplate screws fastening the coverplate to the DFE module front panel.
3. Remove and save the screw fastening the coverplate to the main board.

Installing the Optional Ethernet Interface Module

Refer to Figure 3-2 and proceed as follows:

1. Position the Ethernet interface module so its front panel is under the edge of the DFE module front panel.
2. Align the two interface module connectors with the main board connectors. Then press straight down over the two interface module connectors, applying pressure until they are properly seated.

Figure 3-2 Installing the Optional Ethernet Interface Module



1	Optional interface module	**3**	Interface module connectors	**5**	Saved coverplate screws (2)
2	Front panel	**4**	Main board connectors	**6**	Saved screw

3. Use two of the saved coverplate screws to fasten the interface module to the DFE module front panel, but do not tighten screws at this time.
4. Insert the last saved screw through the interface module to the standoff on the main board. Thread the screw into the standoff, but do not tighten at this time.
5. Tighten the two front coverplate screws first, then the screw to the standoff.
6. This completes the interface module installation. To install Mini-GBICs into the interface module, proceed to "Installing Optional Mini-GBICs" on page 3-5 for the Mini-GBIC installation instructions. Otherwise, proceed to "Backplane Connections and Installation Rules" on page 3-8 to install the module into the chassis.

Installing Optional Mini-GBICs

This section describes how to install a Mini-GBIC. For a list of supported Mini-GBICs and their specifications, refer to "Mini-GBIC Input/Output Specifications" on page A-4.

Warning: Fiber-optic Mini-GBICs use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

Advertencia: Los Mini-GBICS de fibra optica usan lasers de clase 1. No se debe usar instrumentos opticos para ver la potencia laser El uso de los instrumentos opticos para ver la potencia laser incrementa el riesgo a los ojos. Cuando vean el puerto de la potencia optica, la corriente debe ser removida del adaptador de la red.

Warnhinweis: Mini-GBICs mit Fiber-Optik Technologie benutzen Laser der Klasse 1. Benutzen sie keinesfalls optische Hilfsmittel, um die Funktion des Lasers zu überprüfen. Solche Hilfsmittel erhöhen die Gefahr von Sehschäden. Wenn sie den optischen Port überprüfen möchten stellen Sie sicher, dass die Komponente von der Spannungsversorgung getrennt ist.

Caution: Carefully follow the instructions in this manual to avoid damaging the Mini-GBIC, Ethernet interface module, and DFE-Platinum module.

The Mini-GBIC, Ethernet interface module, and DFE-Platinum module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the Mini-GBIC, Ethernet interface module, and DFE-Gold module. Always leave the Mini-GBIC in the antistatic bag or an equivalent antistatic container when not installed.

Precaución: Siga las instrucciones del manual para no dañar el Mini- GBIC, la interface del módulo Ethernet ni el módulo DFE-Platinum, puesto que son muy sensible a las descargas de electricidad estática. Utilice la pulsera antiestática y tome todas las precauciones necesarias durante este procedimiento. Si no lo hace, podría dañar el Mini-GBIC, la interface el módulo Ethernet o el módulo DFE-Platinum. Mientras no esté instalado, mantenga el Mini- GBIC en su bolsa antiestática o en cualquier otro recipiente antiestático.

To prepare and install a Mini-GBIC, refer to Figure 3-3, Figure 3-4, or Figure 3-5, as appropriate, and proceed as follows:

Preparation

Before installing the Mini-GBIC, proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the Mini-GBIC from the antistatic packaging.
2. Remove the Mini-GBIC from the packaging.
3. If there is a protective dust cover (see [**5**] in Figure 3-3 or Figure 3-4) in the Mini-GBIC connector, do not remove it at this time.

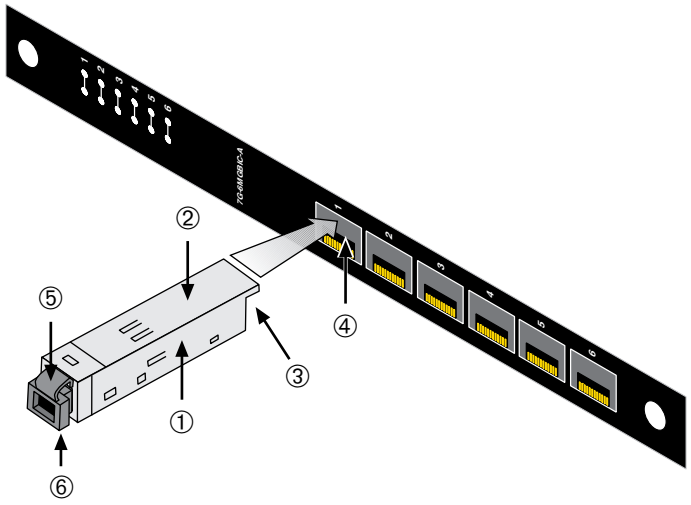
Installation

To install a Mini-GBIC with an MT-RJ connection, refer to Figure 3-3; for an LC connection, Figure 3-4; or for an RJ45 connection, Figure 3-5, then proceed as follows:

Note: The following instructions apply whether you are installing a Mini-GBIC in an Ethernet interface module as shown in the following figures or in the front-panel port slots 1 through 18 of the 7G4280-19.

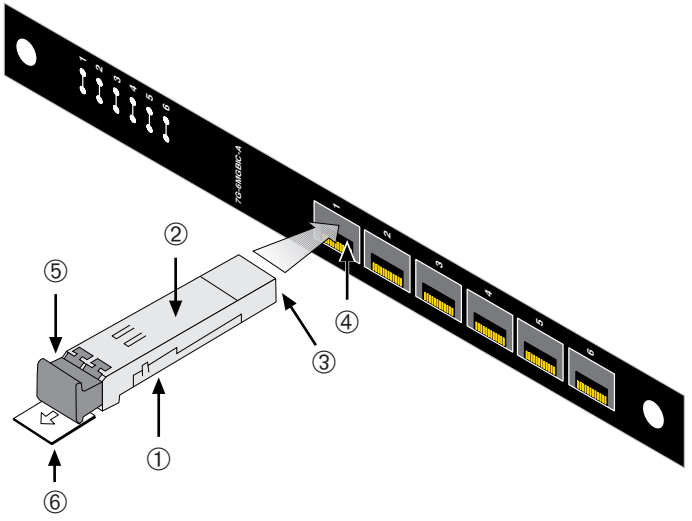
1. Hold the Mini-GBIC with its top side facing up and its 7-pin edge connector facing the port slot.
2. Carefully align the Mini-GBIC with the port slot.
3. Push the Mini-GBIC into the port slot until the Mini-GBIC "clicks" and locks into place.

Figure 3-3 Mini-GBIC with MT-RJ Connector



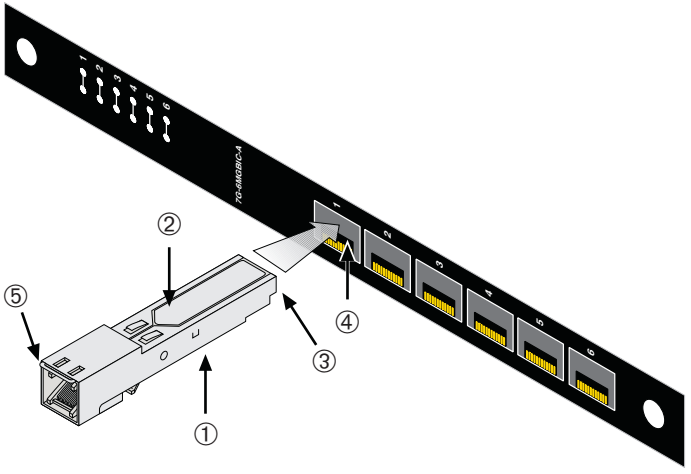
1	Mini-GBIC (MGBIC-MT01)	**4**	Port slot
2	Mini-GBIC, top side	**5**	Mini-GBIC, protective dust cover
3	7-Pin edge connector (insertion side)	**6**	Release tab

Figure 3-4 Mini-GBIC with LC Connector



1 Mini-GBIC (MGBIC-LC01 or MGBIC-LC09)
2 Mini-GBIC, top side
3 7-Pin edge connector (insertion side)
4 Port slot
5 Mini-GBIC, protective dust cover
6 Release tab

Figure 3-5 Mini-GBIC with RJ45 Connector



1 Mini-GBIC (MGBIC-02)
2 Mini-GBIC, top side
3 7-Pin edge connector (insertion side)
4 Port slot
5 Wire-handle release

Removing the Mini-GBIC

To remove a Mini-GBIC from a port slot, proceed as follows:

Caution: Do NOT remove a Mini-GBIC from a slot without releasing the locking tab located at the front of the Mini-GBIC. This can damage the Mini-GBIC.

The Mini-GBIC and its host device are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damaging the Mini-GBIC or host device. Always leave the Mini-GBIC in the antistatic bag or an equivalent antistatic container when not installed.

Precaución: NO quite el Mini- GBIC de la ranura sin antes abrir la traba ubicada en la parte frontal del Mini- GBIC.

Si lo hace, puede dañar el Mini- GBIC, puesto que es muy sensible a las descargas de electricidad estática, al igual que el dispositivo host. Utilice la pulsera antiestática y tome todas las precauciones necesarias durante este procedimiento. Si no lo hace, pude dañar el Mini- GBIC o el dispositivo host. Mientras no esté instalado, mantenga el Mini- GBIC en su bolsa antiestática o en cualquier otro recipiente antiestático.

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the Mini-GBIC.
2. Remove the cable connected to the Mini-GBIC.
3. Release the Mini-GBIC from the port slot. Refer back to the appropriate figure listed below to locate the release mechanism and proceed as instructed.
   - For the type of Mini-GBIC shown in Figure 3-3, push in on the release tab as far as it will go to release the Mini-GBIC.
   - For the type of Mini-GBIC shown in Figure 3-4, pull out on the release tab to release the Mini-GBIC.
   - For the type of Mini-GBIC shown in Figure 3-5, pull down on the wire handle to release the Mini-GBIC.
4. Grasp the sides of the Mini-GBIC and pull it straight out of the port slot.

If storing or shipping a fiber-optic Mini-GBIC, insert its dust protector to protect its fiber-optic ports.

Backplane Connections and Installation Rules

Note: A lowercase x indicates the general use of an alphanumeric character (for example, 6x1xx, the x's indicate a combination of numbers or letters).

The following sections describe the FTM1 and FTM2 backplane connections, and the hardware configuration rules when installing first (6x1xx), second (6x2xx), third (6x3xx), and fourth (7xxxxx) generation modules into the same Matrix E7 chassis.

FTM1 and FTM2 Connectivity

The Matrix E7 (6C107) chassis has backplanes referred to as FTM1 and FTM2. The 7xxxxx DFE modules use FTM2 for high speed communication to each other and operate as one switching unit with a single IP address. The traffic through these modules does not connect to FTM1 except through an FTM bridging module such as the 7H4382-25, 7H4382-49, 7H4383-49, or the 7H4385-49.

These DFE modules have connections to both FTM1 and FTM2 backplanes, enabling them to route frames between the two backplanes and all modules in the 6C107 chassis. However, the older first (6x1xx), second (6x2xx), and third (6x3xx) generation modules are still managed using their own Local Management and are not subject to management by the DFE module management entity.

The Matrix N3 (7C103) and Matrix N7 (7C107) chassis have only FTM2 connections and support only DFE modules. The Matrix N5 (7C105-P) has FTM2 connections and also supports PoE-compliant DFE modules.

Module Placement and Rules

The DFE series modules can be installed in a Matrix E7, Matrix N1, Matrix N3, Matrix N5, or Matrix N7 chassis. When installing the modules into one of these chassis, make sure to consider the following placement rules for the appropriate chassis and module mix.

Matrix N1 Chassis, Module Placement

The Matrix N1 chassis slot 1 will support only DFE modules.

Rule: There are no particular rules for installing DFE modules into a Matrix N1 chassis.

Matrix N3 Chassis, Module Placement

The Matrix N3 chassis slots 1 through 3 will support only DFE modules.

Rule: There are no particular rules for installing DFE modules into a Matrix N3 chassis.

Matrix N5 Chassis, Module Placement

The Matrix N5 chassis slots 1 through 5 will support only DFE modules.

Rule: There are no particular rules for installing DFE modules into a Matrix N5 chassis.

Matrix N7 Chassis, Module Placement

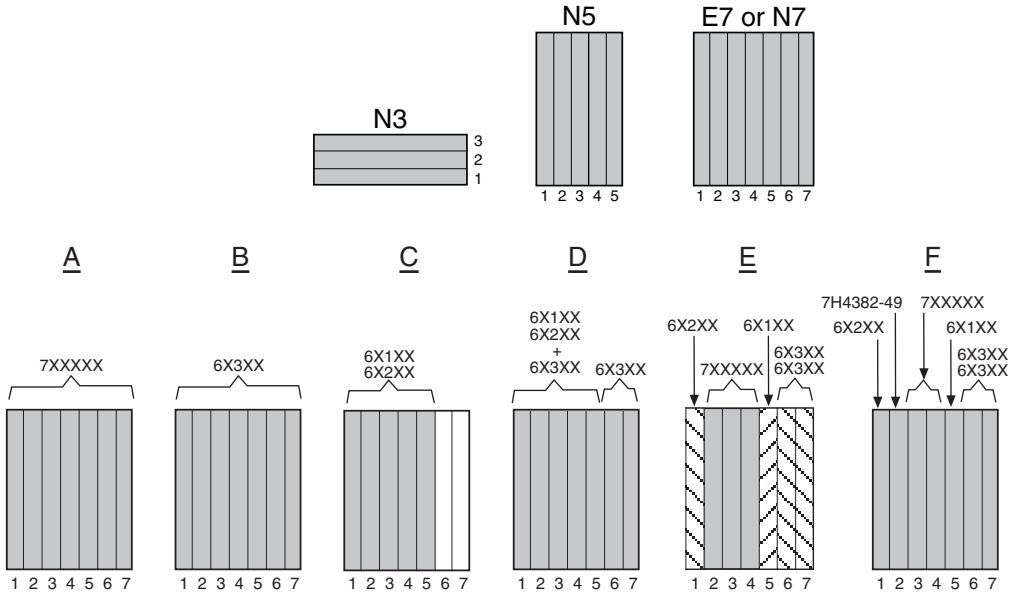
The Matrix N7 chassis slots 1 through 7 will support only DFE modules.

Rule: There are no particular rules for installing DFE modules into a Matrix N7 chassis.

Matrix E7 Chassis, Module Placement

Depending on the modules being installed in the Matrix E7 chassis and to help ensure proper operation, consider the following examples and rules for module placement in the chassis. Figure 3-6 shows six examples of chassis module placement. These examples are described below along with the applicable module placement rule.

Figure 3-6 Examples, Module Placement in Matrix E7 Chassis



Example 1 (Figure 3-6, A)

Shows the chassis fully populated with DFE modules (7xxxxx). These modules communicate with each other via the FTM2 chassis backplane and act as a single switching entity with one IP address. The DFE modules are configured using a Command Line Interface set of commands.

Rule: DFE modules can be installed in any available chassis slot in the Matrix E7 chassis.

Example 2 (Figure 3-6, B)

Shows the chassis fully populated with third generation modules (6x3xx). These modules can also be installed in any available chassis slot in the Matrix E7 chassis, but operate as individual modules with separate IP addresses. Each module is configured using Local Management.

Rule: The 6x3xx modules can be installed in any available chassis slot in the Matrix E7 chassis.

Example 3 (Figure 3-6, C)

Shows chassis slots 1 through 5 populated with first and second generation modules (6x1xx and 6x2xx). If a 6x1xx or 6x2xx series module is installed in slot 6 or 7, it will operate in standalone mode (no backplane connectivity). Like the 6x3xx modules, the 6x1xx and 6x2xx modules operate as individual modules with separate IP addresses, and each one is configured using Local Management.

Rule: The 6x1xx and 6x2xx modules can communicate with each other when they are installed in chassis slots 1 through 5 in the Matrix E7 chassis. If installed in slot 6 or 7, they operate in standalone mode.

Example 4 (Figure 3-6, D)

Shows chassis slots 1 through 5 populated with a mix of 6x1xx, 6x2xx, and 6x3xx modules and only third generation modules in slots 6 and 7.

In this module arrangement, the 6x3xx module provides a proxy bridge, which enables the 6x1xx and 6x2xx modules to communicate with 6x3xx modules in slot 6 or 7. If more than one 6x3xx module is installed in slots 1 to 5, the module in the lowest numbered slot performs the proxy function for slots 6 and 7. Therefore, if a 6x3xx module is already performing the proxy function, and another 6x3xx module is inserted into a lower numbered slot, connectivity will be temporarily interrupted, as the new board takes over the proxy function. When a 6x3xx module in a lower numbered slot is removed, and there is a 6x3xx module in a higher numbered slot, communication is not interrupted.

For Local Management, plugging the Local Management connection into the 6x3xx modules will allow management connections to all 6x1xx, 6x2xx, and 6x3xx modules. If the Local Management connection is to a 6x1xx or 6x2xx board, only the modules in the first five slots will be recognized by the management client.

Rule: There must be at least one 6x3xx module in slots 1 through 5 to enable communications between the 6x1xx, 6x2xx, and 6x3xx modules.

Example 5 (Figure 3-6, E)

Shows chassis slots 1 and 5 populated with 6x2xx and 6x1xx modules, respectively; slots 2 through 4 with DFE modules without a bridging module; and slots 6 and 7 with 6x3xx modules.

In this module arrangement, the 6x2xx and 6x1xx modules in slots 1 and 5 can only communicate with each other, because there is no 6x3xx module in one of the first five slots to serve as the proxy bridge to communicate with the 6x3xx modules in slots 6 and 7. The 7x4xxx DFE modules in slots 2, 3, and 4 will operate under one IP address. Since there is no DFE bridging module, the DFE modules will not communicate with any other modules in the chassis.

Rule: In this example, there must be at least one 6x3xx series module, and a bridging module in any of the slots 1 through 5 to enable communications between all generations of modules in the chassis.

Example 6 (Figure 3-6, F)

The module arrangement in this example is similar to the one shown in Figure 3-6, **E** and described in Example 5. The only difference is that one of the bridging modules (7H4382-25, 7H4382-49, 7H4383-49, or 7H4385-49) is installed in slot 2, enabling all modules to communicate with each other. The 7H4382-49 is used in this example.

Rule: In this example, the bridging module serves as both the FTM1-to-FTM2 bridge and the five-to-seven slot proxy bridge. The 6x3xx does not serve as a proxy bridge in this configuration because the bridging module is in a slot with a lower number.

Installing 7G4280-19 in Matrix E7, N5, or N7 Chassis

Caution: Failure to observe static safety precautions could cause damage to the DFE-Platinum module. Follow static safety handling rules and wear the antistatic wrist strap.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

Precaución: Si no toma las medidas de seguridad necesarias para evitar descargas de electricidad estática, es posible que el módulo se dañe. Siga los consejos de seguridad para la manipulación del producto y no olvide utilizar la pulsera antiestática.

No corte la bolsa antiestática para sacar el módulo. Tenga en cuenta que si algún objeto cortante entra en contacto con la placa o con los componentes, éstos podrían dañarse.

To install any module into the Matrix E7 chassis, refer to "Backplane Connections and Installation Rules" on page 3-8 to familiarize yourself with the FTM1 and FTM2 backplane connections and the module hardware installation rules. Then proceed to "Preparation" on page 3-12 to start the installation process.

To install a DFE module into a Matrix N7 or Matrix N5 chassis, proceed directly to "Preparation" to start the installation process.

Preparation

1. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow for cooling. (Save the blank plate in the event you need to remove the module.)
2. Remove the module from the shipping box. (Save the box and packing materials in the event the module needs to be reshipped.)
3. Locate the antistatic wrist strap shipped with the chassis. Attach the antistatic wrist strap to your wrist and plug the cable from the antistatic wrist strap into the ESD grounding receptacle at the upper right corner of the chassis.

4. Remove the module from the plastic bag. (Save the bag in the event the module must be reshipped.) Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
5. Examine the module for damage. If any damage exists, DO NOT install the module. Immediately contact Enterasys Networks. Refer to "Getting Help" on page 1-8.

Installation

To install the module, refer to Figure 3-7 and proceed as follows:

Caution: To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.

Ensure that the top lever lines up with the desired slot number located on the front panel of the chassis. Refer to Figure 3-7.

1. Locate the chassis card guides that line up with the slot number in which the module will be installed. Make sure the module locking levers are in the open position (top and bottom).
2. Align the module card between the upper and lower card guides of the desired slot and slide it into the chassis, taking care that the module slides in straight. See Caution below.

Caution: Due to the amount of force needed to properly seat the module connectors into the backplane connectors, it is best to apply force to the end of the levers to insert (or eject) the module. Otherwise, damage could result to the module and chassis.

Precaución: Para colocar los conectores del módulo en los conectores del panel posterior correctamente es necesario hacer bastante fuerza, por ello, para insertar o quitar el módulo, se recomienda concentrar la fuerza en el extremo de las palancas. Si no lo hace, podría dañar el módulo y el chasis.

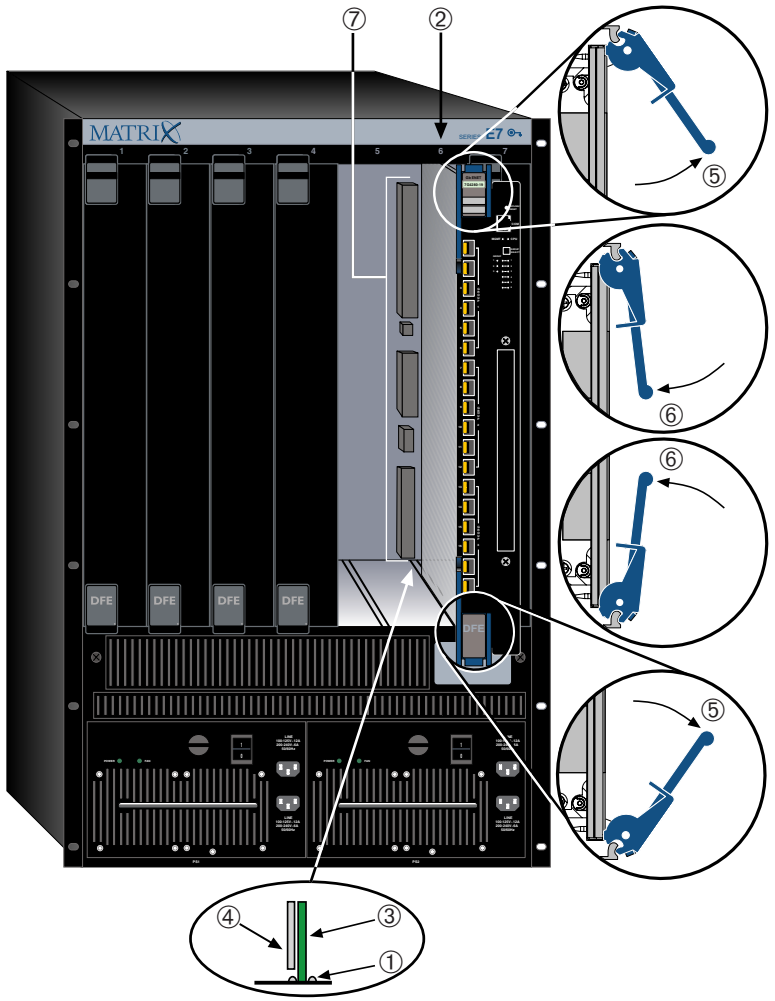
3. Slide the module into the slot until you can engage the top and bottom locking levers.

Caution: In step 5, do not force the locking levers to the point that they touch the face of the front panel. Forcing the locking levers to this point could damage the module and chassis.

Precaución: En el paso 5, tenga cuidado de no llevar las palancas de cierre a un punto en donde estén en contacto con el panel frontal. Si lo hace, podría dañar el módulo y/o el chasis.

4. Refer to the Caution note above, then rotate the two levers into the closed position.
5. If the chassis in which the module is installed was powered down for the installation, turn the power supplies on. Check to see that the module CPU LED settles at solid green after a few minutes. If the LED does not turn solid green, refer to Chapter 4 for troubleshooting details.

Figure 3-7 Installing Module into Matrix E7, Matrix N5, or Matrix N7 Chassis



1 Card guides
2 Slot number 6 (Left-most slot is 1)
3 Module card
4 Metal back panel
5 Upper/lower locking tabs (in proper open position)
6 Upper/lower locking tab (in closed position)
7 Backplane connectors
- Top two connectors (power and FTM2
- Bottom two connectors (power and FTM1) (no bottom connectors in Matrix N7 or N5 chassis)

Installing 7G4280-19 in Matrix N3 or N1 Chassis

Caution: Failure to observe static safety precautions could cause damage to the DFE-Platinum module. Follow static safety handling rules and wear the antistatic wrist strap.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

Precaución: Si no toma las medidas de seguridad necesarias para evitar descargas de electricidad estática, es posible que el módulo se dañe. Siga los consejos de seguridad para la manipulación del producto y no olvide utilizar la pulsera antiestática.

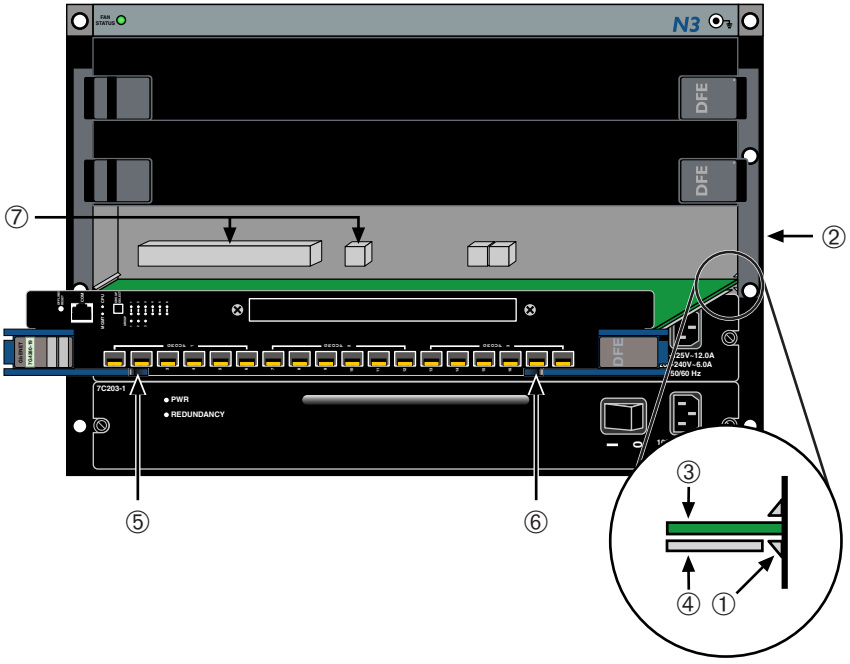
No corte la bolsa antiestática para sacar el módulo. Tenga en cuenta que si algún objeto cortante entra en contacto con la placa o con los componentes, éstos podrían dañarse.

To install a DFE module into the Matrix N3 or N1 chassis, use the installation procedure described in "Installing 7G4280-19 in Matrix E7, N5, or N7 Chassis" on page 3-12. A DFE module can be installed in any available chassis slot. To install a DFE module, refer to Figure 3-8 and proceed as described in "Installing 7G4280-19 in Matrix E7, N5, or N7 Chassis" on page 3-12.

Caution: When setting the locking levers to the closed position, do not try to force the locking levers to the point that they touch the face of the front panel. Forcing the locking levers to this point could damage the module and chassis.

Precaución: Al mover las palancas a la posición de cerrado, tenga cuidado de no llevarlas a un punto en donde estén en contacto con el panel frontal. Si lo hace, podría dañar el módulo o el chasis.

Figure 3-8 Installing Module into Matrix N3 or N1 Chassis



1	Card guides	**5**	Upper locking tab (shown in closed position)
2	Slot 1. The top slot is slot 3.	**6**	Lower locking tab (shown in closed position)
3	Module card	**7**	FTM2 and power backplane connectors
4	Metal back panel		

Connecting to the Network

This section describes how to monitor and verify the port connection and activity of segments connected to Mini-GBICs installed in the 7G4280-19 front-panel and the 7G-6MGBIC/7G-6MGBIC-A front-panel.

Note: If the DFE module is being installed in a network using Link Aggregation, there are rules concerning the network cable and port configurations that must be followed for Link Aggregation to operate properly. Before connecting the cables, refer to the *Matrix DFE-Platinum Series Configuration Guide* for the configuration information. For details on how to obtain manuals, refer to “Related Documents” on page xv.

The front panel ports 1 through 18 and the 6 ports of the 7G-6MGBIC/7G-6MGBIC-A support all Mini-GBICs available from Enterasys Networks. Except for the procedure to verify the port status after connecting cables, the installation procedure for the RJ45 copper cable connection and fiber-optic connection described in the following sections are similar.

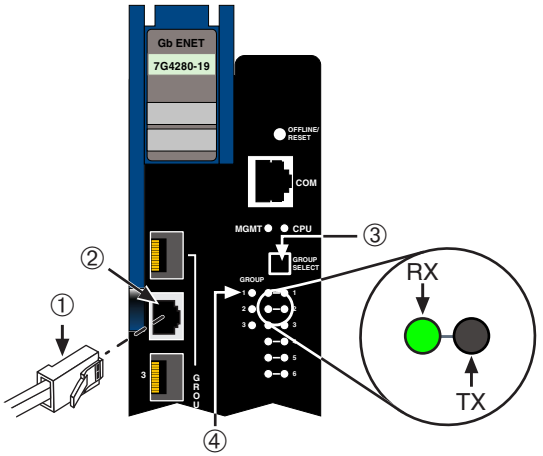
Monitoring and Verifying Front-Panel Port Connections

When installing Mini-GBICs in the front-panel ports 1 through 18, you may need to select a group of ports to verify the port operation. Initially GROUP 1 LED is green, indicating the status RX/TX LEDs are showing the activity of the Group 1 ports (1 through 6). To view the receive and transmit activity on Group 2 ports (7 through 12), or Group 3 ports (13 through 18), press the GROUP SELECT button for less than one second (see Figure 3-9) to step to the next GROUP of ports. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.

Monitoring and Verifying 7G-6MGBIC/7G-6MGBIC-A Port Connections

Unlike monitoring the front-panel port status as described above, the status of the six 7G-6MGBIC/7G-6MGBIC-A ports is indicated by the RX/TX LEDs on the 7G-6MGBIC/ 7G-6MGBIC-A front panel without the need to select them, as described in "Connecting UTP Cables to Mini-GBICs" on page 3-18 and "Connecting Fiber-Optic Cables to Mini-GBICs" on page 3-22.

Figure 3-9 Connecting a Twisted Pair Segment to the 7G4280-19



1	RJ45 cable connector	**3**	GROUP SELECT button
2	RJ45 port connector	**4**	GROUP LED (shows group selected)

Connecting UTP Cables to Mini-GBICs

The MGBIC-02 has a 1000BASE-T RJ45 copper-wire port connection with automatic crossover detection. This port has internal crossovers and supports automatic-polarity sensing.

Automatic-polarity sensing eliminates the need for a crossover cable, regardless if the connection is to another network device (such as a bridge, repeater, or router) or a workstation.

Note: The MGBIC-02 port on the 7G-6MGBIC or 7G-6MGBIC-A supports Category 5 Unshielded Twisted Pair (UTP) cabling with an impedance between 85 and 111 ohms. Category 3 cable is not supported.

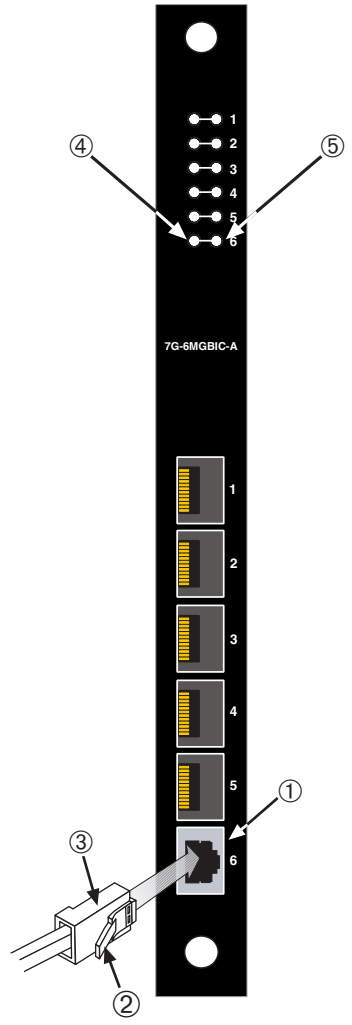
To connect and verify UTP cable connections to a Mini-GBIC RJ45 port, refer to Figure 3-9 and proceed as follows:

1. Remove the protective covers (not shown) from the RJ45 port of the Mini-GBIC.

Note: Leave the protective covers in place when the connectors are not in use to prevent contamination.

2. Ensure that the device connected to the other end of the segment is powered ON.
3. Plug the twisted pair segment into the MGBIC-02 RJ45 connector.

Figure 3-10 Cable Connection to RJ45 Copper Connector



1 Installed Mini-GBIC with RJ45 connector
2 Release tab
3 UTP RJ45 cable connector
4 Port 6 Receive LED (RX)
5 Port 6 Transmit LED (TX)

4. Verify that a link exists by checking that the port RX (Receive) LED is ON (flashing amber, blinking green, or solid green).

Note: When installing Mini-GBICs in the front-panel ports 1 through 18, you may need to select a group of ports to verify the port operation. Initially GROUP 1 LED is green, indicating that the status RX/TX LEDs are showing the activity on Group 1 ports (1 through 6). To view the receive and transmit activity on another group, press the GROUP SELECT button for less than one second (refer back to Figure 3-9) to step to the next GROUP (1, 2, or 3) of 6 ports. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.

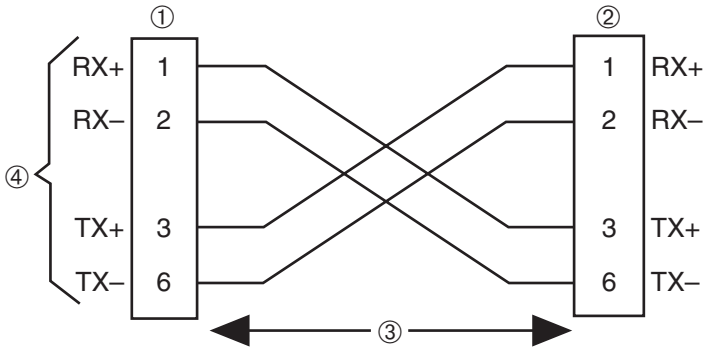
5. If the RX LED is OFF and the TX (Transmit) LED is not blinking amber, perform the following steps until it is on:

   a. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. Category 5 cabling must be used for 1000 Mbps operation.

   b. Verify that the device at the other end of the twisted pair segment is on, and properly connected to the segment.

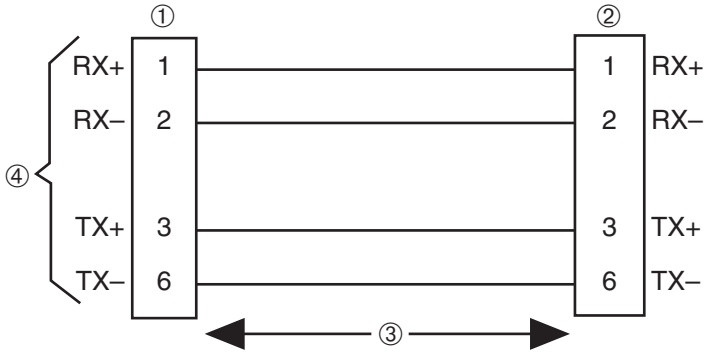
   c. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts and check the cable for continuity. Typically, a crossover cable is used between hub devices. A straight-through cable is used to connect between switches or hub devices and an end user (computer). Refer to Figure 3-11 and Figure 3-12 for four-wire RJ45 connections. Refer to Figure 3-13 and Figure 3-14 for eight-wire RJ45 connections.

Figure 3-11 Four-Wire Crossover Cable RJ45 Pinouts, Connections Between Hub Devices



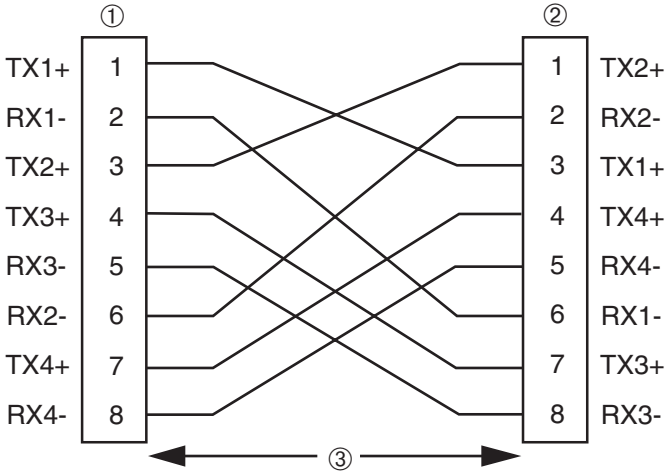
1 RJ45 device port
2 Other device port
3 RJ45-to-RJ45 crossover cable
4 RX+/RX- and TX+/TX- connections. These connections must share a common color pair.

Figure 3-12 Four-Wire Straight-Through Cable RJ45 Pinouts, Connections Between Switches and End-User Devices



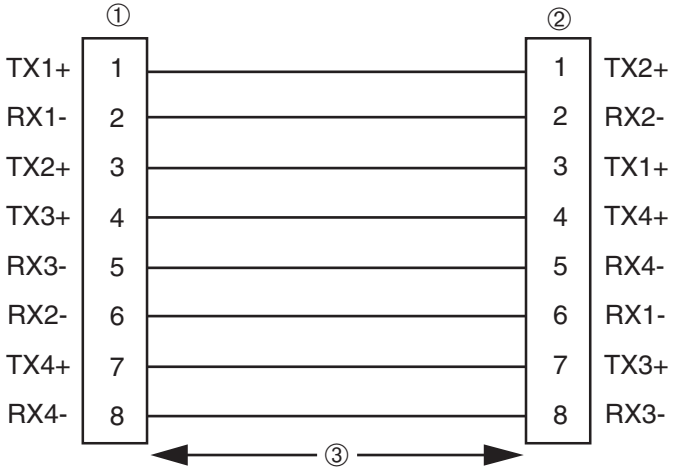
1 RJ45 device port
2 Other device port
3 RJ45-to-RJ45 straight-through cable
4 RX+/RX- and TX+/TX- connections. These connections must share a common color pair.

Figure 3-13 Eight-Wire Crossover Cable RJ45 Pinouts, Connections Between Hub Devices



1 RJ45 device port
2 Other device port
3 RJ45-to-RJ45 crossover cable

Figure 3-14 Eight-Wire Straight-Through Cable RJ45 Pinouts, Connections Between Switches and End-User Devices



1 RJ45 device port
2 Other device port
3 RJ45-to-RJ45 straight-through cable

d. Ensure that the twisted pair connection meets the dB loss and cable specifications outlined in the *Cabling Guide*. Refer to "Related Documents" on page xv for information on obtaining this document. If there is still a problem, contact Enterasys Networks. Refer to "Getting Help" on page 1-8 for details.

Note: If a link has not been established, refer to Chapter 4 for LED troubleshooting details. If the problem persists, refer to "Getting Help" on page 1-8 for details on contacting Enterasys Networks for support.

6. Repeat steps 1 through 5 above, until all connections have been made.

Connecting Fiber-Optic Cables to Mini-GBICs

This section provides the procedure for connecting 1-Gigabit Ethernet fiber-optic segments from the network or other devices to Mini-GBIC MT-RJ or LC port connectors.

Each fiber-optic link consists of two fiber-optic strands within the cable: Transmit (TX) and Receive (RX)

The transmit strand from a module port connects to the receive port of a fiber-optic Gigabit Ethernet device at the other end of the segment. The receive strand of the applicable MT-RJ port on the module connects to the transmit port of the fiber-optic Gigabit Ethernet device (shown in Figure 3-15) or LC cable connector (shown in Figure 3-16).

The following procedure describes how to connect an MT-RJ cable (Figure 3-15) connector to a Mini-GBIC port connector. This procedure also applies to an LC cable connector shown in (Figure 3-16). Refer to Figure 3-15 as an example and proceed as follows:

1. Remove the protective covers (not shown) from the MT-RJ fiber-optic port on the Mini-GBIC and from the connectors on each end of the cable.

Note: Leave the protective covers in place when the connectors are not in use to prevent contamination.

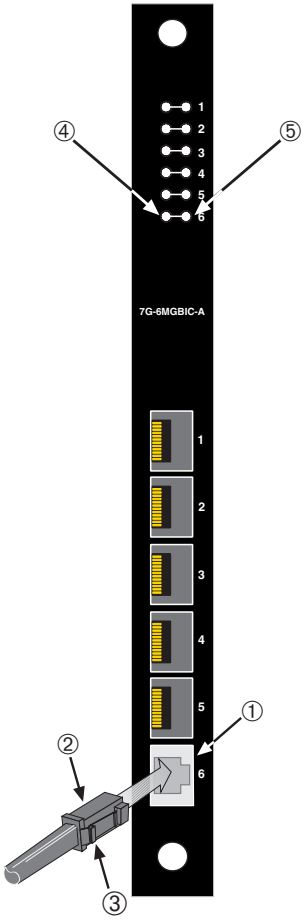
Caution: Do not touch the ends of the fiber-optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of cable ends causes problems in data transmissions. If the ends of the fiber-optic strands become contaminated, use a canned duster to blow the surfaces clean. A cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

Precaución: No toque los extremos de los cables de fibra óptica y evite su contacto con el polvo, la suciedad o con cualquier otro contaminante. Si los extremos de los cables se ensucian, es posible que la transmisión de datos se vea afectada. Si nota que los extremos de los cables de fibra óptica se ensucian, utilice aire comprimido para limpiarlos. También puede limpiarlos con un estropajo embebido en alcohol isopropílico.

2. Insert the MT-RJ cable connector into the Mini-GBIC until it clicks into place.

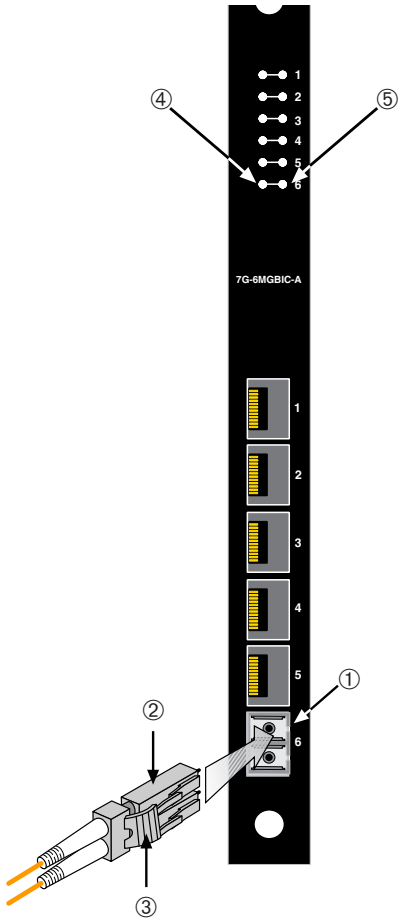
Note: To remove the MT-RJ cable connector, press on its release tab and pull it out of the Mini-GBIC.

Figure 3-15 Cable Connection to MT-RJ Fiber-Optic Connectors



1 Installed Mini-GBIC MT-RJ connector
2 MT-RJ cable connector
3 Release tab
4 Port 6 Receive LED (RX)
5 Port 6 Transmit LED (TX)

Figure 3-16 Cable Connection to LC Fiber-Optic Connectors



1 Installed Mini-GBIC LC connector
2 LC cable connector
3 Release tab
4 Port 6 Receive LED (RX)
5 Port 6 Transmit LED (TX)

3. Plug the other end of the cable into the appropriate port on the other device. Some cables may be terminated at the other end with two separate connectors, one for each fiber-optic strand. In this case, ensure that the transmit fiber-optic strand is connected to the receive port and the receive fiber-optic strand to the transmit port.
4. Verify that a link exists by checking that the port RX LED is on (flashing amber, blinking green, or solid green).

Note: When installing Mini-GBICs in the front-panel ports 1 through 18, you may need to select a group of ports to verify the port operation. Initially GROUP 1 LED is green, indicating that the status RX/TX LEDs are showing the activity on Group 1 ports (1 through 6). To view the receive and transmit activity on another group, press the GROUP SELECT button for less than one second (refer back to Figure 3-9) to step to the next GROUP (1, 2, or 3) of 6 ports. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.

5. If the RX LED is off, perform the following steps until it is on:
   a. Verify that the device at the other end of the segment is ON and connected to the segment.
   b. If there are separate fiber-optic connections on the other device, check the crossover of the cables. Swap the cable connections if necessary.
   c. Check that the fiber-optic connection meets the dB loss and cable specifications outlined in the *Cabling Guide* for multimode fiber-optic cabling. To obtain this document, refer to "Related Documents" on page i-xv.

   Note: If a link has not been established, refer to Chapter 4 for LED troubleshooting details. If the problem persists, refer to "Getting Help" on page 1-8 for details on contacting Enterasys Networks for support.

6. Repeat steps 1 through 5, above, until all connections have been made.

Connecting to COM Port for Local Management

This section describes how to install a UTP straight-through cable with RJ45 connectors and optional adapters to connect a PC, a VT series terminal, or a modem to an Enterasys Networks module to access Local Management. This section also provides the pinout assignments of the adapters.

What Is Needed

The following is a list of the user-supplied parts that may be needed depending on the connection:

- RJ45-to-DB9 female adapter
- UTP straight-through cable terminated at both ends with RJ45 connectors
- RJ45-to-DB25 female adapter
- RJ45-to-DB25 male adapter

Using a UTP straight-through cable and an RJ45-to-DB9 adapter, you can connect products equipped with an RJ45 COM port to an IBM or compatible PC running a VT series emulation software package.

Using a UTP straight-through cable and an RJ45-to-DB25 female adapter, you can connect products equipped with an RJ45 COM port to a VT series terminal or VT type terminals running emulation programs for the VT series.

Using a UTP straight-through cable and an RJ45-to-DB25 male adapter, you can connect products equipped with an RJ45 COM port to a Hayes compatible modem that supports 9600 baud.

Connecting to an IBM PC or Compatible Device

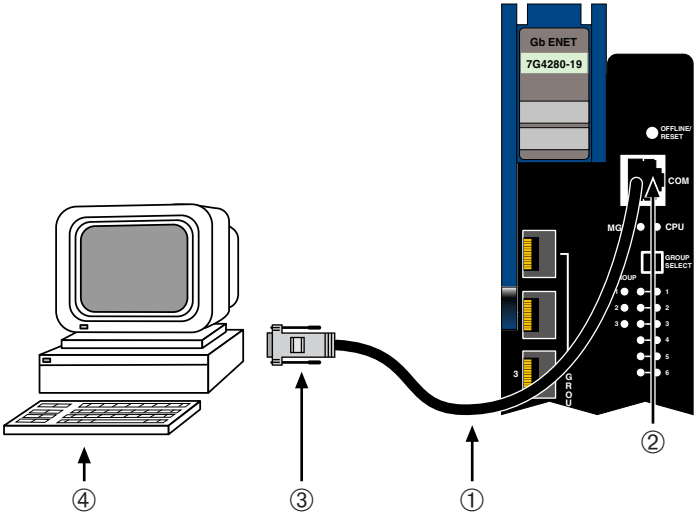
To connect an IBM PC or compatible device, running the VT terminal emulation, to an Enterasys Networks module COM port (Figure 3-17), proceed as follows:

1. Connect the RJ45 connector at one end of the UTP straight-through cable to the communications COM port on the Enterasys Networks module. (The COM port is also known as a Console port.)
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into an RJ45-to-DB9 adapter.
3. Connect the RJ45-to-DB9 adapter to the communications port on the IBM PC.
4. Turn on the PC and set the following parameters on your VT emulation package:

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

5. When these parameters are set, the Local Management password screen will display. Refer to the appropriate *Matrix DFE-Platinum Series Configuration Guide* for further information.

Figure 3-17 Connecting an IBM PC or Compatible



1 UTP straight-through cable with RJ45 connectors
2 RJ45 COM port
3 RJ45-to-DB9 PC adapter
4 IBM PC or compatible device

Connecting to a VT Series Terminal

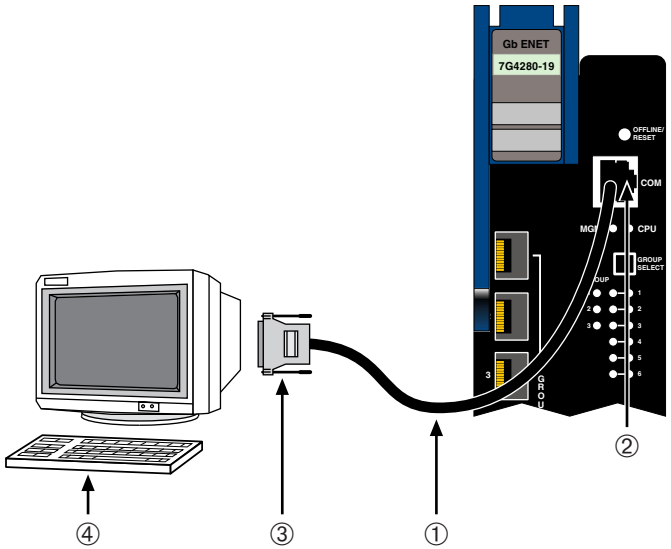
To connect a VT Series terminal to an Enterasys Networks DFE module COM port (Figure 3-18), use a UTP straight-through cable with RJ45 connectors and an RJ45-to-DB25 female adapter, and proceed as follows:

1. Connect the RJ45 connector at one end of the UTP straight-through cable to the COM port on the Enterasys Networks module.
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into the RJ45-to-DB25 female adapter.
3. Connect the RJ45-to-DB25 adapter to the port labeled COMM on the VT terminal.
4. Turn on the terminal to access the Setup Directory and set the following parameters:

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

When these parameters are set, the Local Management password screen will display. Refer to the *Matrix DFE-Platinum Series Configuration Guide* for further information.

Figure 3-18 Connecting a VT Series Terminal



1 UTP straight-through cable with RJ45 connectors
2 RJ45 COM port
3 RJ45-to-DB25 VT adapter
4 VT series terminal

Connecting to a Modem

To connect a modem to an Enterasys Networks DFE module COM port (Figure 3-19), use a UTP straight-through cable with RJ45 connectors and an RJ45-to-DB25 male adapter, and proceed as follows:

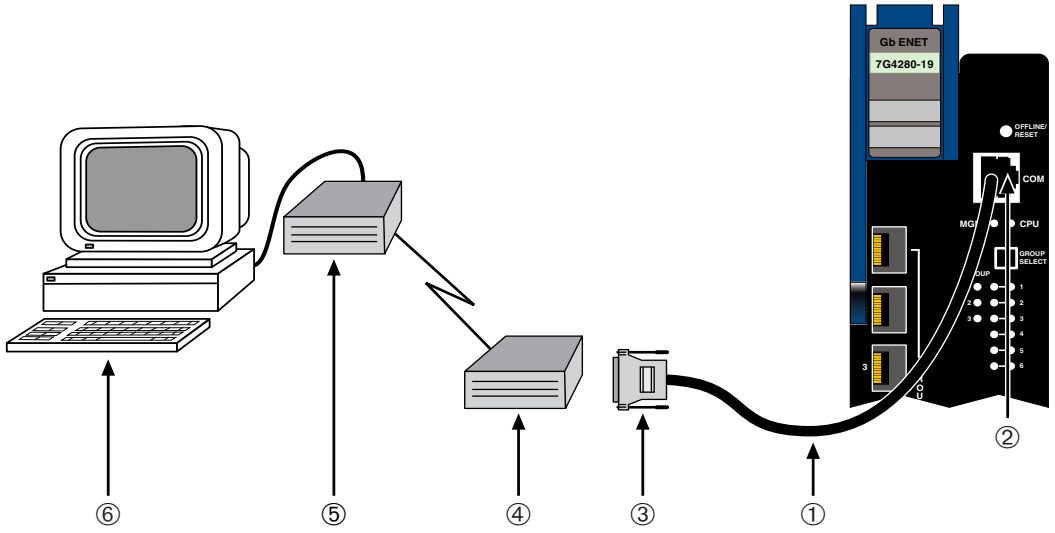
1. Connect the RJ45 connector at one end of the UTP straight-through cable to the COM port of the module.
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into the RJ45-to-DB25 modem adapter.
3. Connect the RJ45-to-DB25 adapter to the communications port on the modem.
4. Turn on the modem.

5. With a PC connected to a remote modem, you can configure the switch remotely. To accomplish this, you must configure your PC VT emulation package with the following parameters.

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

6. When these parameters are set, the Local Management password screen will display. Refer to the *Matrix DFE-Platinum Series Configuration Guide* for further information.

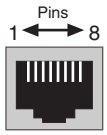
Figure 3-19 Connecting to a Modem



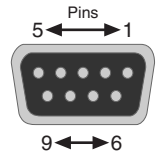
1 UTP straight-through cable with RJ45 connectors
2 RJ45 COM port
3 RJ45-to-DB25 modem adapter
4 Local modem
5 Remote modem
6 PC

Adapter Wiring and Signal Assignments

COM Port Adapter Wiring and Signal Diagram			
RJ45		**DB9**	
Pin	Conductor	Pin	Signal
1	Blue	2	Receive (RX)
4	Red	3	Transmit (TX)
5	Green	5	Ground (GRD)
2	Orange	7	Request to Send (RTS)
6	Yellow	8	Clear to Send (CTS)

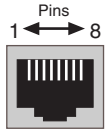


RJ45 Connector (Female)

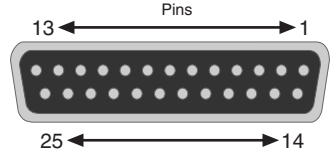


DB9 Connector (Female)

VT Series Port Adapter Wiring and Signal Diagram			
RJ45		**DB25**	
Pin	Conductor	Pin	Signal
4	Red	2	Transmit (TX)
1	Blue	3	Receive (RX)
6	Yellow	5	Clear to Send (CTS)
5	Green	7	Ground (GRD)
2	Orange	20	Data Terminal Ready

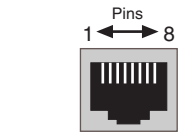


RJ45 Connector (Female)

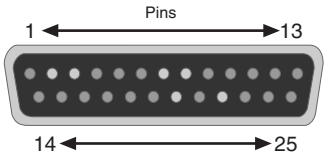


DB25 Connector (Female)

Modem Port Adapter Wiring and Signal Diagram			
RJ45		DB25	
Pin	Conductor	Pin	Signal
1	Blue	2	Transmit (TX)
2	Orange	8	Data Carrier Detect (DCD)
4	Red	3	Receive
5	Green	7	Ground (GRD)
6	Yellow	20	Data Terminal Ready (DTR)
8	Gray	22	Ring Indicator



RJ45 Connector (Female)



DB25 Connector (Male)

Completing the Installation

Completing the DFE module installation depends on if the module is being installed in

- a new DFE module system (refer to "Completing the Installation of a New System" on page 3-32), or
- an established, operating DFE module system (refer to "Completing the Installation of a DFE Module in an Existing System" on page 3-34).

Completing the Installation of a New System

In a new system of DFE modules, one of the installed DFE modules will become the management module on chassis power up, and all DFE modules will automatically be set to the factory default values. A complete list of the factory default values are provided in Chapter 3 of the *Matrix DFE-Platinum Series Configuration Guide*.

After installing all DFE modules into the host chassis and making the connections to the network, proceed to the following First-Time Log-In Using a Console Port Connection procedure to access the module management startup screen from your PC, terminal, or modem connection.

First-Time Log-In Using a Console Port Connection

Note: This procedure applies only to initial log-in, and to logging in to a device not yet configured with administratively-supplied user and password settings.

By default, the Matrix DFE Series device is configured with three user login accounts: **ro** for Read-Only access; **rw** for Read-Write access; and **admin** for super-user access to all modifiable parameters. The default password is set to blank (press **Enter**). For information on changing these default passwords, refer to Chapter 3 in the *Matrix DFE-Platinum Series Configuration Guide*.

Start the Command Line Interface (CLI) from the module's local console port as follows:

1. Connect a terminal to the local console port as described in "Connecting to COM Port for Local Management" on page 3-26. The startup screen, Figure 3-20, displays.
2. At the login prompt, enter one of the following default user names:
   - **ro** for Read-Only access,
   - **rw** for Read-Write access, or
   - **admin** for Super User access. (This access level allows Read-Write access to all modifiable parameters, including user accounts.)
3. Press **Enter**.
4. The Password prompt displays. Leave this string blank and press **Enter**. The module information and Matrix prompt displays as shown in Figure 3-20.

The DFE module is now ready to be configured. For information about setting the IP address and configuring Telnet settings for remote access to DFE management, refer to Chapter 3 in the *Matrix DFE-Platinum Series Configuration Guide*. The CLI commands enable you to initially set up and perform more involved management configurations.

The *Matrix DFE-Platinum Series Configuration Guide* is available online at:

http://www.enterasys.com/support/manuals

If you require assistance, contact Enterasys Networks using one of the methods described in "Getting Help" on page 1-8.

Figure 3-20 Matrix DFE Startup Screen Example (N7 Chassis)

```
login: admin
Password:


M A T R I X N7
Command Line Interface

Enterasys Networks, Inc.
50 Minuteman Rd.
Andover, MA 01810-1008 U.S.A.

Phone:  +1 978 684 1000
E-mail: support@enterasys.com
WWW:   http://www.enterasys.com

(c) Copyright Enterasys Networks, Inc. 2003

Chassis Serial Number:     xxxxxxxxxxx
Chassis Firmware Revision: xx.xx.xx

Matrix N7(su)->
```

Completing the Installation of a DFE Module in an Existing System

In an established DFE module system,

- a DFE module is already established as the management module,
- the passwords have already been set for various users,
- the system IP address is set, and
- other system parameters have been set.

When you install a new DFE module into a system with an existing configured user account, the current system settings in that account are already recognized by the new DFE module and it will operate accordingly.

If you need to change any settings, you can connect a terminal to the local console port as described in "Connecting to COM Port for Local Management" on page 3-26 to access system management, or use a Telnet connection to access the DFE module system management as described in Chapter 3 of the *Matrix DFE-Platinum Series Configuration Guide*.

Logging in with an Administratively-Configured User Account

If the device's default user account settings have been changed, proceed as follows:

1. At the login prompt, enter your administratively-assigned user name and press **Enter**.
2. At the Password prompt, enter your password and press **Enter**.

The notice of authorization and the Matrix prompt displays as shown back in Figure 3-20.

Note: Users with Read-Write (rw) and Read-Only access can use the **set password** command to change their own passwords. Administrators with Super User (su) access can use the **set system login** command to create and change user accounts, and the **set password** command to change any local account password. For information on the set password and set system login commands, refer to Chapter 3 in the *Matrix DFE-Platinum Series Configuration Guide*.

The DFE module is now ready to be configured. For information about setting the IP address and configuring Telnet settings for remote access to DFE management, refer to Chapter 3 in the *Matrix DFE-Platinum Series Configuration Guide*. The CLI commands enable you to initially set up and perform more involved management configurations.

The *Matrix DFE-Platinum Series Configuration Guide* is available online at:

http://www.enterasys.com/support/manuals

If you require assistance, contact Enterasys Networks using one of the methods described in "Getting Help" on page 1-8.

4

Troubleshooting

This chapter provides information concerning the following:

For information about...	Refer to page...
Using LANVIEW Diagnostic LEDs	4-1
Troubleshooting Checklist	4-4
Overview of DFE Module Shutdown Procedure (Special Instructions)	4-7
Recommended Shutdown Procedure Using OFFLINE/RESET Switch	4-8
Last Resort Shutdown Procedure Using OFFLINE/RESET Switch	4-8

Using LANVIEW Diagnostic LEDs

The DFE module uses a built-in visual diagnostic and status monitoring system called LANVIEW. The LANVIEW LEDs (Figure 4-1) allow quick observation of the network status to aid in diagnosing network problems.

About the Management (MGMT) LED

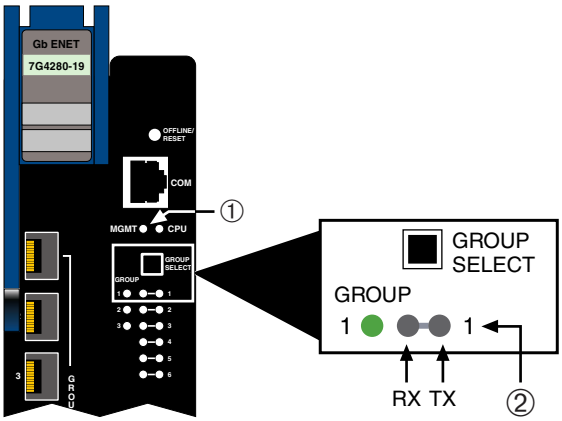
The MGMT LED (shown in Figure 4-1) indicates when the module is serving as the Management Module to control the management functions for all DFE modules in the chassis. The Management Module handles all IP requests to the chassis IP address, such as, but not limited to, PING, Telnet, SNMP, HTTP. The Management Module also handles the CLI configuration sessions through the console port. So, when you plug into a DFE module COM port to configure a DFE module in the chassis, it is handled by the Management Module regardless of the DFE module COM port that you use.

Viewing the Receive and Transmit Activity

You can view the 7G4280-19 receive and transmit port activity on the RX and TX LEDs. However, only one group of six ports may be viewed at a time.

To view the receive and transmit activity on a group of 7G4280-19 segments, press the GROUP SELECT button (see Figure 4-1) for less than one second to step to the group of interest (Groups 1 through 3). Each time the GROUP SELECT button is pressed for less than one second, the GROUP LED lights up in sequence, indicating which group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each port.

Figure 4-1 LANVIEW LEDs



1 MGMT LED **2** Group 1, Port 1 LEDs

Table 4-1 describes the LED indications and provides recommended actions as appropriate.

Note: The terms **flashing**, **blinking**, and **solid** used in Table 4-1 indicate the following:

- **Flashing** indicates LED is flashing randomly.
- **Blinking** indicates LED is flashing at a steady rate (approximately 50% on, 50% off).
- **Solid** indicates a steady LED light. No pulsing.
- **Alternate** indicates LED is flashing in a steady rate other than 50% on, 50% off.

Table 4-1 LANVIEW LEDs

LED	Color	State	Recommended Action
MGMT	Off	**Off**. This DFE module is NOT the Management Module.	None.
	Green	**Solid**. This module is the designated Management Module.	None.
	Amber	**Flashing**. This is a temporary indication that the DFE module is saving data.	None.
CPU	Off	Power off.	Ensure chassis has adequate power.
	Amber	**Blinking**. DFE module in process of booting.	None.
		Solid. Testing.	If the LED remains amber for several minutes, contact Enterasys Networks for technical support.
	Green	**Blinking**. Image starts running.	None.
		Solid. Functional.	None.
	Red	**Solid**. Processor in reset.	None.
	Green and Amber	**Blinking**. Indicates that the DFE module is in the process of shutting down.	None. This state is activated when the OFFLINE/RESET switch is pressed for less than 1 second to start the process of an orderly shutdown. While in this state, do not remove any DFE module.
	Amber and off	**Alternately (67% on, 33% off)**. Indicates that a shutdown process has completed. This indication will remain for 60 seconds before automatically restarting.	While in this state, you have 60 seconds to safely remove the DFE module from the chassis.

Table 4-1 LANVIEW LEDs (continued)

LED	Color	State	Recommended Action
RX/TX Indications in Standard Mode			
RX (Receive)	Off	**No link**. No activity. Port enabled or disabled.	None.
	Green	**Solid**. Link present, port enabled, no traffic is being received by the interface.	None.
	Amber	**Flashing**. Link present, port enabled, traffic is being received by the interface.	None.
TX (Transmit)	Off	Port enabled, but no activity.	If it is known that the port should be active and is not, contact Enterasys Networks for technical support.
	Green	**Flashing**. Indicates data transmission activity. Rate of flashing indicates the data rate.	None.
	Red	**Flashing**. Fault or Error (collision).	None, unless there is a high rate of activity. In this case, check for network configuration problems or a defective device.

Troubleshooting Checklist

If the module is not working properly, refer to Table 4-2 for a checklist of problems, possible causes, and recommended actions to resolve the problem.

Table 4-2 Troubleshooting Checklist

Problem	Possible Cause	Recommended Action
All LEDs are OFF.	Loss of power.	Ensure that the DFE module was installed properly according to the installation instructions in Chapter 3, and that the host chassis is providing power.

Table 4-2 Troubleshooting Checklist (continued)

Problem	Possible Cause	Recommended Action
No Local Management Password screen.	Incorrect terminal setup.	Refer to the *Matrix DFE-Platinum Series Configuration Guide* for proper setup procedures.
	Improper console cable pinouts.	Refer to Appendix A for proper COM port pinouts.
	Corrupt firmware image, or hardware fault.	If possible, attempt to download the image to the DFE module again. Refer to "Setting the Mode Switches" on page B-1 for instructions to clear NVRAM.
Cannot navigate beyond Password screen.	Improper username/password combination entered.	If the username/password combination has been forgotten, refer to "Setting the Mode Switches" on page B-1 for instructions on how to set the mode switch to reset the username/password combination to the default values.
Cannot contact the module through in-band management.	IP address not assigned.	Refer to the *Matrix DFE-Platinum Series Configuration Guide* for the IP address assignment procedure.
	Port is disabled.	Enable port. Refer to the *Matrix DFE-Platinum Series Configuration Guide* for instructions to enable/disable ports.
	Host Port policy and/or management VLAN is incorrectly configured, or not configured.	Verify that a management VLAN exists and that it is associated with the Host Port. Refer to the *Matrix DFE-Platinum Series Configuration Guide* for information about Host Port and management VLAN configuration.
	No link to device.	Verify that all network connections between the network management station and the DFE module are valid and operating. If the problem continues, contact Enterasys Networks for technical support.

Table 4-2 Troubleshooting Checklist (continued)

Problem	Possible Cause	Recommended Action
Port(s) goes into standby for no apparent reason.	Loop condition detected.	Verify that Spanning Tree is enabled. Refer to the *Matrix DFE-Platinum Series Configuration Guide* for the instructions to set the type of STA. Review the network design and delete unnecessary loops. If the problem continues, contact Enterasys Networks for technical support.
User parameters (IP address, device and module name, etc.) were lost when the module power was cycled, the front panel OFFLINE/ RESET switch was pressed.	Position of Mode switch (7), Persistent Data Reset, was changed sometime before either cycling power or pressing the OFFLINE/RESET switch, causing the user-entered parameters to reset to factory default settings. Clear Persistent Data that was set through Local Management. The DFE module was moved either from slot-to-slot or from chassis-to-chassis.	Reenter the lost parameters as necessary. Refer to the *Matrix DFE-Platinum Series Configuration Guide* for the instructions to configure the DFE module. If the problem continues, contact Enterasys Networks for technical support.

Overview of DFE Module Shutdown Procedure (Special Instructions)

Caution: Do not remove a DFE-Platinum module from an operating chassis system before reading the following information and instructions.

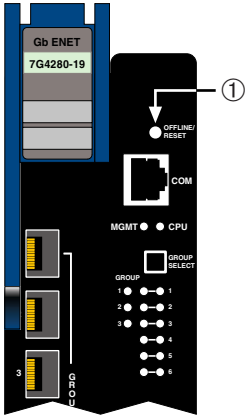
Precaución: Antes de retirar los módulos DFE-Platinum del chasis en funcionamiento, lea las siguientes instrucciones y la información suministrada.

The DFE modules installed in a Matrix E7,Matrix N1, Matrix N3, Matrix N5, or Matrix N7 chassis are interdependent and operate under a single IP address as a single, distributed switch system (hardware, databases, and persistent storage). In this operating environment, the DFE module must shut down in an orderly fashion to ensure that the other modules in the system and other devices on the network are notified of the impending change. The device(s) can then make intelligent decisions and stabilize the network before the change is made; thereby increasing network availability.

You can shut down a DFE module in an operating system using the OFFLINE/RESET switch shown in Figure 4-2. There are two procedures to shut down a DFE module.

- Recommended shutdown procedure (“Recommended Shutdown Procedure Using OFFLINE/RESET Switch” on page 4-8)
- Last resort shutdown procedure (not recommended) (“Last Resort Shutdown Procedure Using OFFLINE/RESET Switch” on page 4-8)

Figure 4-2 OFFLINE/RESET Switch



1 OFFLINE/RESET switch

Recommended Shutdown Procedure Using OFFLINE/RESET Switch

Caution: Do not pull any DFE-Platinum module out of an operating chassis before it has completed its shutdown routine.

Precaución: No retire los módulos DFE-Platinum del chasis en funcionamiento hasta que no se haya terminado con la rutina de apagado.

Before pulling a DFE module out of a chassis,

press or tap on its OFFLINE/RESET switch for less than 1 second.

Its CPU LED changes from solid green to blinking between green and amber, indicating that the DFE module is shutting down. At the end of the DFE module shutdown routine, the CPU LED changes to a 67%/33% sequence of amber/off, respectively, indicating the module is in a halt state. In this time it is safe to restart or remove the DFE module from the chassis.

When a controlled shutdown is initiated from the OFFLINE/RESET switch, you have 60 seconds from the time the CPU starts flashing amber/off until the time the device is automatically restarted.

Note: The only safe time to pull a DFE module out of the chassis is when the CPU LED is blinking amber. Otherwise, system operation will be interrupted.

Last Resort Shutdown Procedure Using OFFLINE/RESET Switch

Caution: This method of shutting down a DFE-Platinum module is not recommended except as a last resort, because all processes currently running on the module will be interrupted resulting in loss of frames.

Precaución: No se recomienda utilizar este método para apagar los módulos DFE-Platinum. Recurra a él sólo como último recurso, puesto que interrumpe todos los procesos del módulo en funcionamiento, lo que podría resultar pérdidas de frames.

To reset a DFE module without it performing an orderly shutdown routine,

press and hold the OFFLINE/RESET switch for approximately 6 seconds.

Pulling any DFE module out of the chassis before it has been shut down is not recommended. The only safe time to pull a module out of the chassis is after the completion of a shutdown and the management LED is flashing amber/off.

A

Specifications

This appendix provides information about the following:

For information about...	Refer to page...
7G4280-19 Specifications	A-2
7G-6MGBIC/7G-6MGBIC-A Specifications	A-3
Mini-GBIC Input/Output Specifications	A-4
Gigabit Ethernet Specifications	A-4
COM Port Pinout Assignments	A-7
Regulatory Compliance	A-8

Enterasys Networks reserves the right to change the specifications at any time without notice.

7G4280-19 Specifications

Table A-1 provides the Input/Output ports, processors and memory, physical, and environmental module specifications for the 7G4280-19 DFE module.

Table A-1 7G4280-19 Specifications

Item	Specification
Ports	
Ports 1 through 18	Mini-GBIC slots for up to 18 mix-and-match 1000BASE-SX, -LX, -ELX and 1000BASE-T compliant Mini-GBICs. Refer to "Mini-GBIC Input/Output Specifications" on page A-4.
Port Interface Option Slot	Supports one optional Ethernet interface module.
Processors/Memory	
Processor	MPC750CX, 400 MHz processor
Dynamic Random Access Memory (DRAM)	128 MB
FLASH Memory	32 MB
Physical	
Dimensions	46.43 H x 6.05 W x 29.51 D (cm) 18.28 H x 2.38 W x 11.62 D (in.)
Approximate Weight	Gross: 5.0 kg (11.0 lb) (shipping carton containing one module) Net: 3.86 kg (8.5 lb) (one module without packaging)
Predicted hours for Mean Time Between Failures (MTBF)	For the MTBF hours for this module, refer to the MTBF web site at URL http://www.enterasys.com/support/mtbf/
Environmental	
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

7G-6MGBIC/7G-6MGBIC-A Specifications

At the time this manual was first printed, two interface modules (7G-6MGBIC and 7G-6MGBIC-A) are available from Enterasys Networks. Refer to Table A-2 for specifications.

Table A-2 7G-6MGBIC/7G-6MGBIC-A Port/Environmental Specifications

Item	Specification
Mini-GBIC port slots	Six slots that can support optional fiber-optic 1000BASE-SX, -LX, -ELX compliant and 1000BASE-T copper compliant Mini-GBICs. Refer to "Mini-GBIC Input/Output Specifications" on page A-4 for the supported Mini-GBICs.
Physical	
Dimensions	4.34 H x 21.97 W x 18.85 D (cm) 1.71 H x 8.65 W x 7.42 D (in.)
Approximate Weight	Net: 0.68 kg (1.5 lb) (one module without packaging)
MTBF (calculated hours)	575,333
Environmental	
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

Mini-GBIC Input/Output Specifications

The Mini-Gigabit Ethernet Card (Mini-GBIC) port interface slots can support 1-Gbps fiber-optic and copper connections as described in Table A-3. The optional Mini-GBICs are hot swappable.

Table A-3 Mini-GBIC Input/Output Port Specifications

Item	Specification
MGBIC-LC01	Provides one LC fiber-optic multimode port that is compliant with the 1000BASE-SX standard and has an LC connector.
MGBIC-LC03	Provides one LC fiber-optic multimode port that is compliant with the 1000BASE-SX standard and has an LC duplex style connector.
MGBIC-LC09	Provides one LC fiber-optic single-mode port that is compliant with the 1000BASE-LX standard and has an LC connector.
MGBIC-MT01	Provides one MT-RJ fiber-optic multimode port that is compliant with the 1000BASE-SX standard and has an MT-RJ connector.
MGBIC-08	Provides one LC fiber-optic single-mode port that is compliant with the 1000BASE-ELX standard and has an LC connector.
MGBIC-02	Provides one RJ45 copper connection that is compliant with the 1000BASE-T standard and has an RJ45 connector.

Gigabit Ethernet Specifications

The following specifications for the Mini-GBICs (shown in Table A-4 through Table A-12) meet or exceed the IEEE 802.3z-1998 standard.

MGBIC-LC01/MGBIC-MT01 Specifications (1000BASE-SX)

Table A-4 MGBIC-LC01/MGBIC-MT01 Optical Specifications

Item	62.5 µm MMF	50 µm MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Receive Sensitivity	-17 dBm	-17 dBm
Link Power Budget	7.5 dBm	7.5 dBm

Table A-5 MGBIC-LC01/MGBIC-MT01 Operating Range

Item	Modal Bandwidth @ 850 nm	Range
62.5 µm MMF	160 MHz/km	2-220 Meters
62.5 µm MMF	200 MHz/km	2-275 Meters
50 µm MMF	400 MHz/km	2-500 Meters
50 µm MMF	500 MHz/km	2-550 Meters

MGBIC-LC03 Specifications (1000BASE-SX)

Table A-6 MGBIC-LC03 Optical Specifications

Item	62.5/125 µm MMF	50/125 µm MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Transmit Power (maximum)	-3 dBm	-3 dBm
Receive Sensitivity	-20 dBm	-20 dBm
Link Power Budget[1] (Multimode Only)	10.5 dBm	10.5 dBm

1. The maximum drive distance (up to 2 km) depends on the quality of the installed multimode fiber-optic cable segment. Use the Link Power Budget to calculate the maximum cable length of the attached segment. The Link Power Budget must not exceed those specified in this table. The MGBIC-LC03 input power must not exceed -3 dBm. Otherwise, saturation could occur.

Table A-7 MGBIC-LC03 Operating Range

Item	Modal Bandwidth @ 1310 nm	Range
62.5 µm MMF	160 MHz/km	2,000 Meters
50 µm MMF	400 MHz/km	2,000 Meters

MGBIC-LC09 Specifications (1000BASE-LX)

Table A-8 MGBIC-LC09 Optical Specifications

Item	62.5 µm MMF	50 µm MMF	10 µm MMF
Transmit Power (minimum)	-11.5 dBm	-11.5 dBm	-9.5 dBm
Receive Sensitivity	-20 dBm	-20 dBm	-20 dBm
Link Power Budget	8.5 dBm	8.5 dBm	10.5 dBm

Table A-9 MGBIC-LC09 Operating Range

Item	Modal Bandwidth @ 1300 nm	Range
62.5 µm MMF	500 MHz/km	2-550 Meters
50 µm MMF	400 MHz/km	2-550 Meters
50 µm MMF	500 MHz/km	2-550 Meters
10 µm SMF	N/A	2-10,000 Meters

MGBIC-08 Specifications (1000BASE-ELX)

Table A-10 MGBIC-08 Optical Specifications

Item			
Transmit Power (minimum)	-0 dBm, min.	+2 dBm, typical	+5 dBm, max.
Receive Sensitivity	-24 dBm, min.	-26 dBm, typical	
Maximum Input Power	-3 dBm		
Link Power Budget[1] (Full Duplex Only)	23 dBm	28 dBm, typical	

1. The maximum drive distance (up to 70 km) depends on the quality of the installed single-mode fiber-optic cable segment. Use the Link Power Budget to calculate the maximum cable length of the attached segment. The Link Power Budget must not exceed those specified in this table. The MGBIC-08 input power must not exceed -3 dBm. Otherwise, saturation could occur.

Table A-11 MGBIC-08 Operating Range

Item	1550 nm	Range
9 or 10 µm SMF	N/A	70,000 Meters

MGBIC-02 Specifications (1000BASE-T)

Table A-12 MGBIC-02 Specifications

Item	Specification
Supported Cable	
Type	Copper, Category 5 UTP
Maximum Length	Up to 100 meters
Connector	RJ45
Data Rate	1 Gbps, IEEE 802.3:2000 compatible 1000BASE-T operation only Automatic crossover detection
TX Output impedance	100 ohms, typical at all frequencies between 1 MHz and 125 MHz
RX Input impedance	100 ohms, typical at all frequencies between 1 MHz and 125 MHz

COM Port Pinout Assignments

The COM port is a serial communications port for local access to Local Management. Refer to Table A-13 for the COM port pin assignments.

Table A-13 COM Port Pin Assignments

Pin	Signal Name	Input/Output
1	Transmit Data (XMT)	Output
2	Clear to Send (CTS)	Input
3	Data Set Ready (DSR)	Input
4	Receive Data (RCV)	Input
5	Signal Ground (GND)	NA
6	Request to Send (RTS)	Output
7	Data Terminal Ready (DTR)	Output
8	Data Carrier Detect (DCD)	Input

Regulatory Compliance

The 7G4280-19 meets the safety and electromagnetic compatibility (EMC) requirements listed in Table A-14:

Table A-14 Compliance Standards

Regulatory Compliance	Standards
Safety	UL 60950, CSA C22.2 No. 60950, 73/23/EEC, EN 60950, IEC 60950, EN 60825, 21 CFR 1040.10
Electromagnetic Compatibility (EMC)	47 CFR Parts 2 and 15, CSA C108.8, 89/336/EEC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS CISPR 22, VCCI V-3

B

Mode Switch Settings and Installing Options

This appendix covers the following items:

For information about...	Refer to page...
Required Tools	B-1
Setting the Mode Switches	B-1
Memory Locations	B-3
Memory Replacement Procedures	B-3

Required Tools

Use the following tools to perform the procedures provided in this appendix:

- Antistatic wrist strap
- Phillips screwdriver

Caution: An antistatic wrist strap is required to perform the procedures in this appendix. Use the antistatic wrist strap to minimize ESD damage to the devices involved.

Precaución: Para llevar a cabo los procedimientos especificados en el apéndice deberá utilizar una pulsera antiestática. Esta pulsera sirve para minimizar los efectos de las descargas de electricidad estática.

Setting the Mode Switches

Caution: Read the appropriate sections to be fully aware of the consequences when changing switch settings.

Only qualified personnel should change switch settings.

Precaución: Si desea modificar la configuración del interruptor, lea las secciones correspondientes para saber cuál será el resultado de hacerlo.

Estas modificaciones a la configuración sólo debe realizarlas personal calificado.

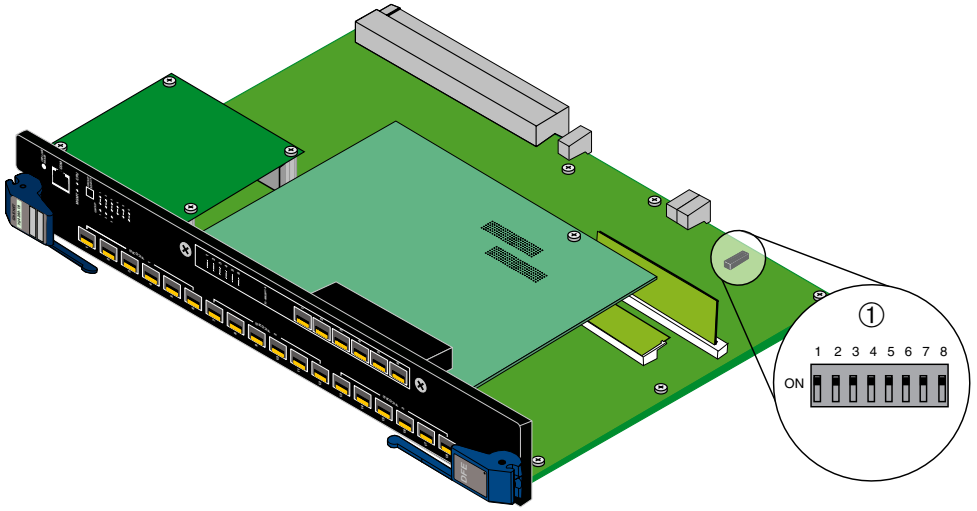
Figure B-1 shows the location of the mode switches and the switch settings for normal operation. These switches are set at the factory and rarely need to be changed.

Switch definitions and positions are as follows:

- Switches 1 through 6 – For Enterasys Networks use only.
- Switch 7 – Clear Persistent Data. Changing the position of this switch clears Persistent Data on the next power-up of the module. All user-entered parameters (such as the IP address, module names, and so forth) are reset to the factory default settings. Once the module resets, you can either use the factory default settings or reenter your own parameters.
- Switch 8 – Clear Admin Password. Changing the position of this switch clears the admin password, and restores the factory default password on the next power-up of the module. Once the module resets, you can either use the factory default settings or reenter your own password.

Note: Do not change the position of Switch 8 unless it is necessary to reset the admin password to its factory default setting.

Figure B-1 Mode Switch Location



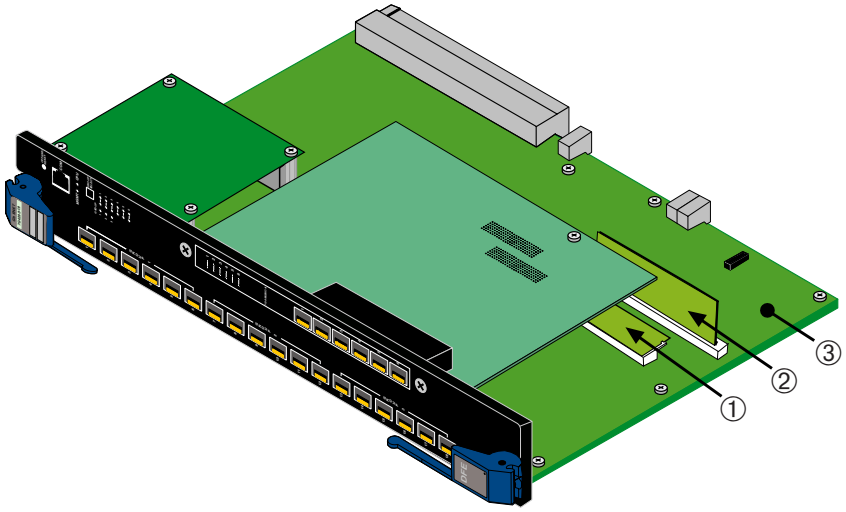
1 Mode switch pack

Memory Locations

If the Dual in Line Memory Module (DIMM) or DRAM Single In-line Memory Module (SIMM) (FLASH memory) needs to be replaced, the following sections describe how to access, locate, and replace these memory modules. If you have questions concerning the replacement of either memory module, refer to "Getting Help" on page 1-8 for details on how to contact Enterasys Networks.

Figure B-2 shows the DIMM and DRAM SIMM locations on the main PC board.

Figure B-2 DIMM and DRAM SIMM Locations



1 DIMM **2** DRAM SIMM **3** Main PC board

Memory Replacement Procedures

For instructions to replace the DRAM SIMM, proceed to "DRAM SIMM Replacement Procedure" on page B-4. To replace the DIMM, proceed to "DIMM Replacement Procedure" on page B-7.

If you have questions concerning the replacement of memory, refer to "Getting Help" on page 1-8 for details on how to contact Enterasys Networks.

DRAM SIMM Replacement Procedure

Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

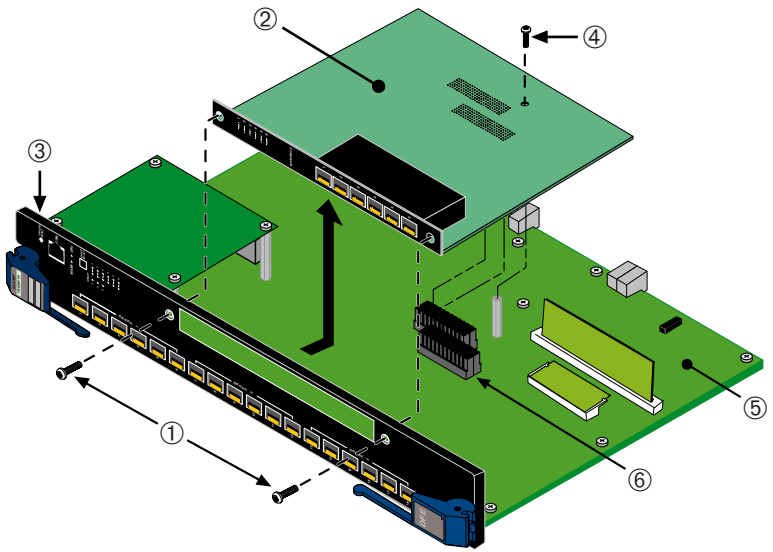
Before you can replace the DRAM SIMM, you must gain access to it by removing the Ethernet interface module, as described in the following section.

Removing the Optional Interface Module

Refer to Figure B-3 and proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions on the antistatic wrist strap package).

Figure B-3 Removing the Optional Interface Module



1	Coverplate screws (2)	**4**	Screw
2	Ethernet interface module	**5**	Main PC board
3	DFE module front panel	**6**	Main board connectors

2. Remove and save the two coverplate screws fastening the Ethernet interface module to the DFE module front panel.
3. Remove and save the screw fastening the Ethernet interface module to the standoff on the main PC board. The screws removed in steps 2 and 3 are used later to reinstall the Ethernet interface module.

4. Lift and remove the Ethernet interface module off the two main PC board connectors. Now you have access to the DRAM SIMM. To replace the DRAM SIMM, proceed to "Removing the DRAM SIMM".

Removing the DRAM SIMM

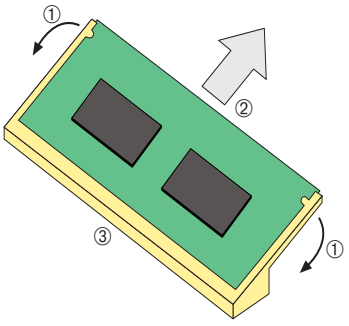
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To remove the existing DRAM SIMM, proceed as follows:

1. Remove and save the seven screws attaching the safety cover to the standoffs on the main PC board.
2. Locate the DRAM SIMM connector on the main PC board. Refer back to Figure B-2 for the DRAM SIMM location on the 7G4280-19.
3. Push the connector arms away from the DRAM SIMM, as shown in Figure B-4, and simultaneously lift the DRAM SIMM enough to release it from the connector fingers.

Figure B-4 Removing the Existing DRAM SIMM



1 Connector arms **2** DRAM SIMM **3** Connector fingers

4. Rotate the DRAM SIMM upwards, then remove it from the connector fingers.

Installing the DRAM SIMM

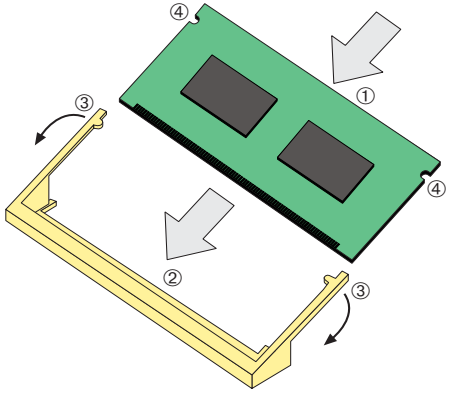
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To install a DRAM SIMM, refer to Figure B-5 and proceed as follows:

1. Insert the DRAM SIMM down between the connector fingers.
2. Pivot the DRAM SIMM downward so the tabs on the connector arms align with the two DRAM SIMM alignment notches. With the two connector arms spread outward, push the DRAM SIMM down between the connector arms. Then release the two connector arms to lock the DRAM SIMM into place.
3. Reinstall the Ethernet interface module. Proceed to "Installing the 7G-6MGBIC/7G-6MGBIC-A" on page B-9 for instructions.

Figure B-5 Installing the DRAM SIMM



1 DRAM SIMM	**3** Connector arms
2 Connector fingers	**4** SIMM alignment notches (2)

DIMM Replacement Procedure

Unlike the DRAM SIMM, the Ethernet interface module does not need to be removed to access the DIMM.

Removing the DIMM

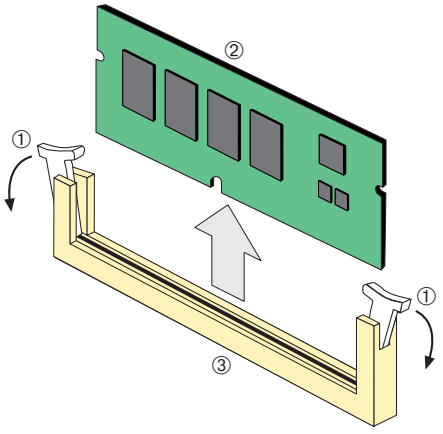
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To remove the existing DIMM, proceed as follows:

1. Locate the DIMM connector on the main PC board. Refer back to Figure B-2.
2. Push the connector arms away from the DIMM, as shown in Figure B-6, enough to release the DIMM from the connector contacts.
3. Pull the DIMM straight up and remove it from the connector contacts.

Figure B-6 Removing the Existing DIMM



1 Connector arms **2** DIMM **3** Connector contacts

Installing the DIMM

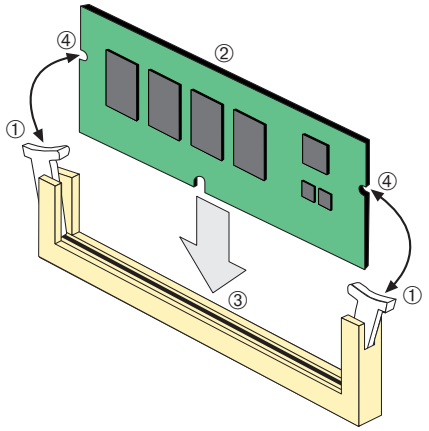
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To install a DIMM, refer to Figure B-7 and proceed as follows:

1. Push the connector arms away from the DIMM enough to insert the DIMM into the connector contacts.
2. Insert the DIMM straight down between the connector contacts enough for the tabs on the connector arms to align with the two DIMM alignment notches.
3. Push the DIMM down into the connector contacts. Then rotate the two connector arms toward the DIMM to lock it into place.
4. This completes the installation of the DIMM.

Figure B-7 Installing the DIMM



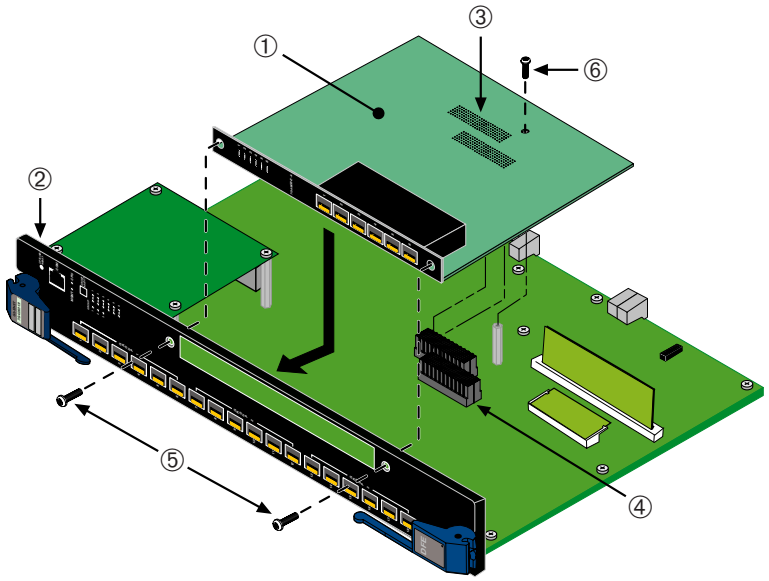
1 DIMM Connector arms
2 DIMM
3 Connector contacts
4 DIMM alignment notches (2)

Installing the 7G-6MGBIC/7G-6MGBIC-A

Refer to Figure B-8 and proceed as follows:

1. Position the interface module so its front panel is under the edge of the DFE module front panel.
2. Align the two interface module connectors with the main board connectors. Then press straight down over the two interface module connectors, applying pressure until they are properly seated.

Figure B-8 Installing the Ethernet Interface Module



1	Optional interface module	**3**	Interface module connectors	**5**	Coverplate screws (2)
2	Front panel	**4**	Main board connectors	**6**	Screw

3. Locate the three screws saved when removing the interface module. Use two of the saved coverplate screws to fasten the interface module to the DFE module front panel, but do not tighten screws at this time.
4. Insert the saved standoff screw through the interface module and into the standoff on the main board. Finger tighten the screw into the standoff (do not tighten screw completely at this time.
5. Tighten the two coverplate screws first, then the one in the standoff.

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